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NORTH AMERICAN

HERPETOLOGY;

OR,

A DESCRIPTION

OF THE

REPTILES INHABITING THE UNITED STATES.

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VOL. II.

PHILADELPHIA:

J. DOBSON, CHESTNUT STREET.

1838.

E. G. DORSEY, PRINTER,
LIBRARY STREET.

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INTRODUCTION.

In offering to the public the second volume of the North American Herpetology, I would return my thanks to those Naturalists who have materially assisted in the progress of the work.

To my friend Dr. Geddings, late of Baltimore, now Professor of Pathological Anatomy, &c. in the Medical College of the State of South Carolina, I am indebted for many valuable observations on the habits of the reptiles of the low country of our state.

I have to thank Dr. Harden, of Riceborough, Georgia, for several living specimens of Batrachian animals, as the Siren striata, &c.; also for several Salamanders, some of which are new to me.

To the Academy of Natural Sciences of Philadelphia, I am indebted for living

specimens of Phrynosomæ, &c., brought from the neighbourhood of the sources of the Red river, together with some curious observations on their habits.

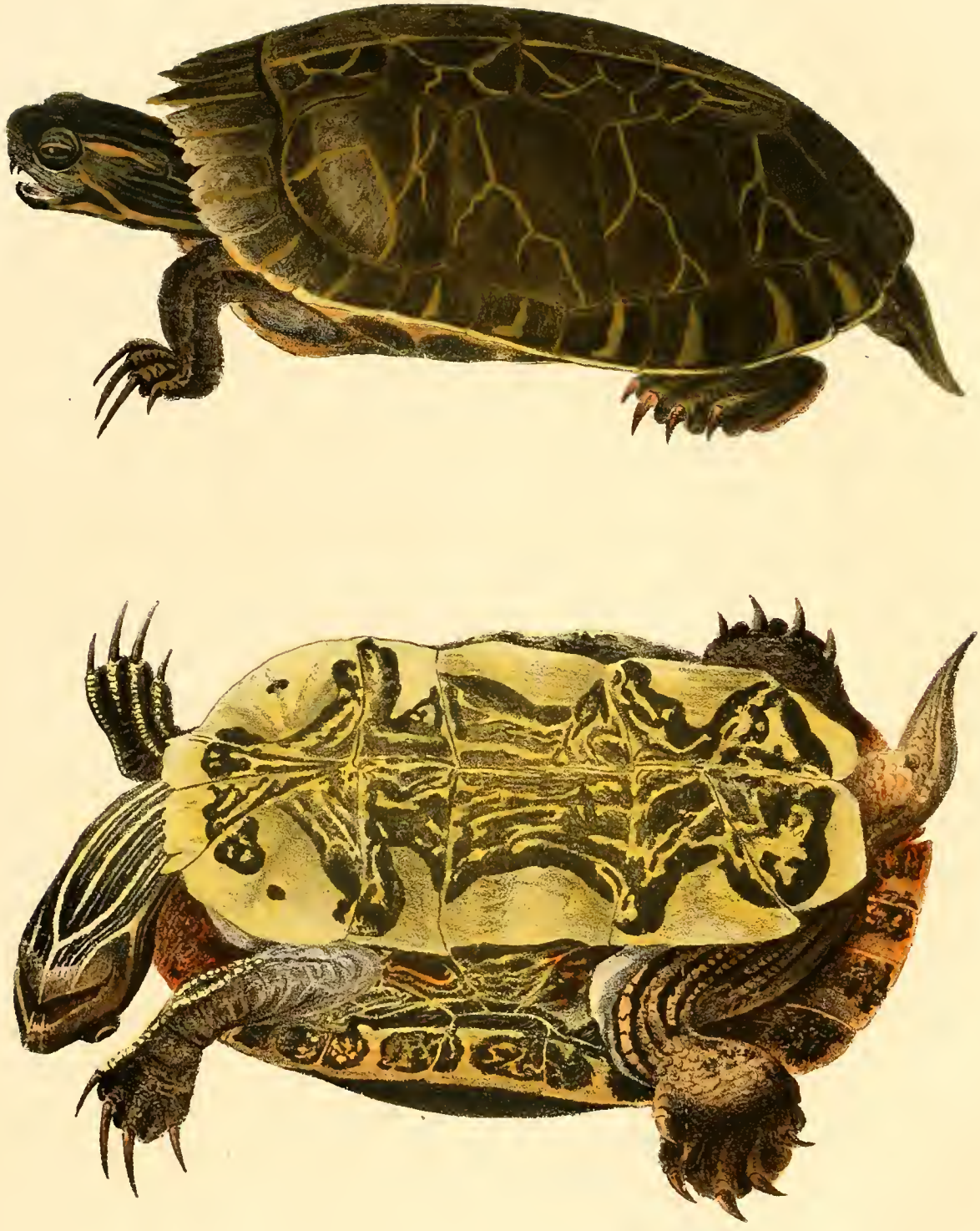
Mr. Nuttall, too, has placed in my hands many animals collected by him in his journey along the banks of the Oregon river. Some of these are yet undescribed; they will appear in a succeeding volume.

I regret to state that death has deprived me of the invaluable services of Mr. Sera, who had been for ten years my draughtsman. Enough, however, of his correct and spirited drawings remain for a third volume.

As the object of this work is truth, or a wish to determine, with as much certainty as possible, the different species of the reptiles of this country, and to extricate them from the multitude of synonymes in which some of them are entangled, I will avail myself of every opportunity of correcting such errors as I may fall into; these will always be stated in an appendix to each volume.

A word or two with respect to the use of specific names. I have endeavoured invariably to retain, with the name of the naturalist describing it, that by which the animal was first made known. These should always be retained, even if bad, though the generic names may, indeed must often, be changed, according to the light thrown by anatomical investigation upon the affinities that animals bear to each other in their structure or organization. Thus, in assigning the

Emys floridana to Leconte, I only mean to retain the specific name given by him to a certain animal which he first described; and it is not to be supposed that he established the genus Emys any more than the genus Testudo, (Testudo floridana,) to which genus he refers it. I have only here to do with species and specific names; in the anatomical part of this work it will be shown why one generic name is preferred to another. In the catalogue of synonymes will be seen not only the different specific names, but also those of the genera under which different Herpetologists have arranged our reptiles. The habit adopted by several late Naturalists, of changing the names by which animals were first described, even though for better and more characteristic denominations, has already led to great confusion, and must lead to greater, since few persons are likely to agree in the characters they think most important.



Emys oregonensis.

1.

P.S. Duval. Lith. Phila.ª

EMYS OREGONIENSIS.—*Harlan.*

Plate I.

Characters. Shell suboval, greatly depressed, serrated in front, slightly emarginate behind; sternum broad, oblong, serrated anteriorly, emarginate posteriorly, with a large black blotch extending to all the plates. Head small, elongated; upper jaw bidentate.

Synonyme. Emys oregoniensis, *Harlan*, Amer. Jour. of Arts and Sciences, vol. xxxi. p. 382, plate 31.

Description. The shell is suboval; broadest behind, and very slightly emarginate; anteriorly it is narrowed, and presents a serrated border; it is greatly depressed, almost flattened along the vertebral line. Of the five vertebral plates, the anterior is irregularly quadrilateral, with its two anterior angles very much prolonged, its lateral margin curved, and its posterior border convex and projecting; the second is hexagonal, with its anterior margin concave, to receive the posterior border of the anterior plate; the third and fourth are also hexagonal; the latter with its posterior margin concave; the fifth is heptagonal, its anterior margin shortest, roundest, and received into the concavity of the posterior margin of the fourth, and with its posterior border more extensive, and joined to four marginal plates. Of the lateral plates, the anterior is irregularly triangular, with its basis rounded, directed forwards, and joined to five of the marginal; the second and third are pentagonal; the fourth is nearly quadrilateral. The marginal plates are twenty-five in number, those in front being longest; the nuchal, or intermediate, is elongated, narrowed posteriorly, and projecting anteriorly; the first are quadrilateral, broadest behind, and serrated in front; the second and third are also

quadrilateral, and serrated anteriorly, but they are broadest in front. All these plates are marked with three concentric lines posteriorly, and are longer than in any other species of Emys that has fallen under my observation. The fourth, fifth, sixth and seventh plates are quadrilateral, smaller, and revolute to form a small groove. The remaining plates are also quadrilateral, broader, but not revolute.

The sternum is broad, slightly contracted in the middle, serrated in front, and emarginate behind. The gular plates are triangular in shape, with their bases directed forwards, and serrated; at their outer angles is a process, prominent, pointed, and projecting beyond the rest of the plate: between these two protuberances is a concavity for the neck. The brachial plates are triangular, their bases round, their apices truncated and directed inwards; the thoracic are narrow, quadrilateral, with their posterior and external angles elongated; the abdominal are pentagonal, and very broad; the femoral are irregularly quadrilateral, and broadest externally; the subcaudal are rhomboidal. Of the supplementary plates, the axillary are triangular, with their apices turned backwards; the inguinal are larger and quadrilateral, with an anterior angle prolonged.

The head is moderately large and elongated; the snout pointed. The upper jaw is furnished in front with two remarkable teeth, and the lower has a well developed hook.

The anterior extremities are rather long, flattened, and covered with large transverse rows of scales; the fingers are five, palmated, and furnished with five strong nails. The posterior extremities are round at the thigh, but greatly flattened at the tarsus; the toes are five in number, and fully palmated, but only four are furnished with nails. The tail is long.

Colour. The shell is dusky brown; the vertebral and lateral plates are marked by pale yellow lines; these communicate with each other, and give a reticulated appearance to the carapace; the marginal plates have each a similar vertical line

subdividing them equally; the intermediate and two anterior on each side are mottled with pale yellow. The sternum is yellow, with a large black blotch in the centre, which is very beautiful, as may be seen in the accompanying plate, but cannot be described; besides this, each brachial plate is marked in the centre with a small circular spot of black. The wings are black, marked with yellow; the under surface of the marginal plates is yellow, with a black spot, mottled with yellow, at the junction of each plate.

The head is dusky above, with small pale yellow lines. The jaws are horn colour; a yellow line begins at the posterior and superior margin of the orbit, and runs along the lateral and superior border of the neck; another begins at the posterior and inferior margin of the orbit, and descends to join a third and still larger band that arises about the middle of the lower jaw; after the junction, they extend along the lateral and inferior margin of the neck. The throat is dark brown, with several longitudinal yellowish lines; one of these is remarkable—it begins at the chin, soon splits, and forms two larger lines; between these two is another and shorter line of the same colour.

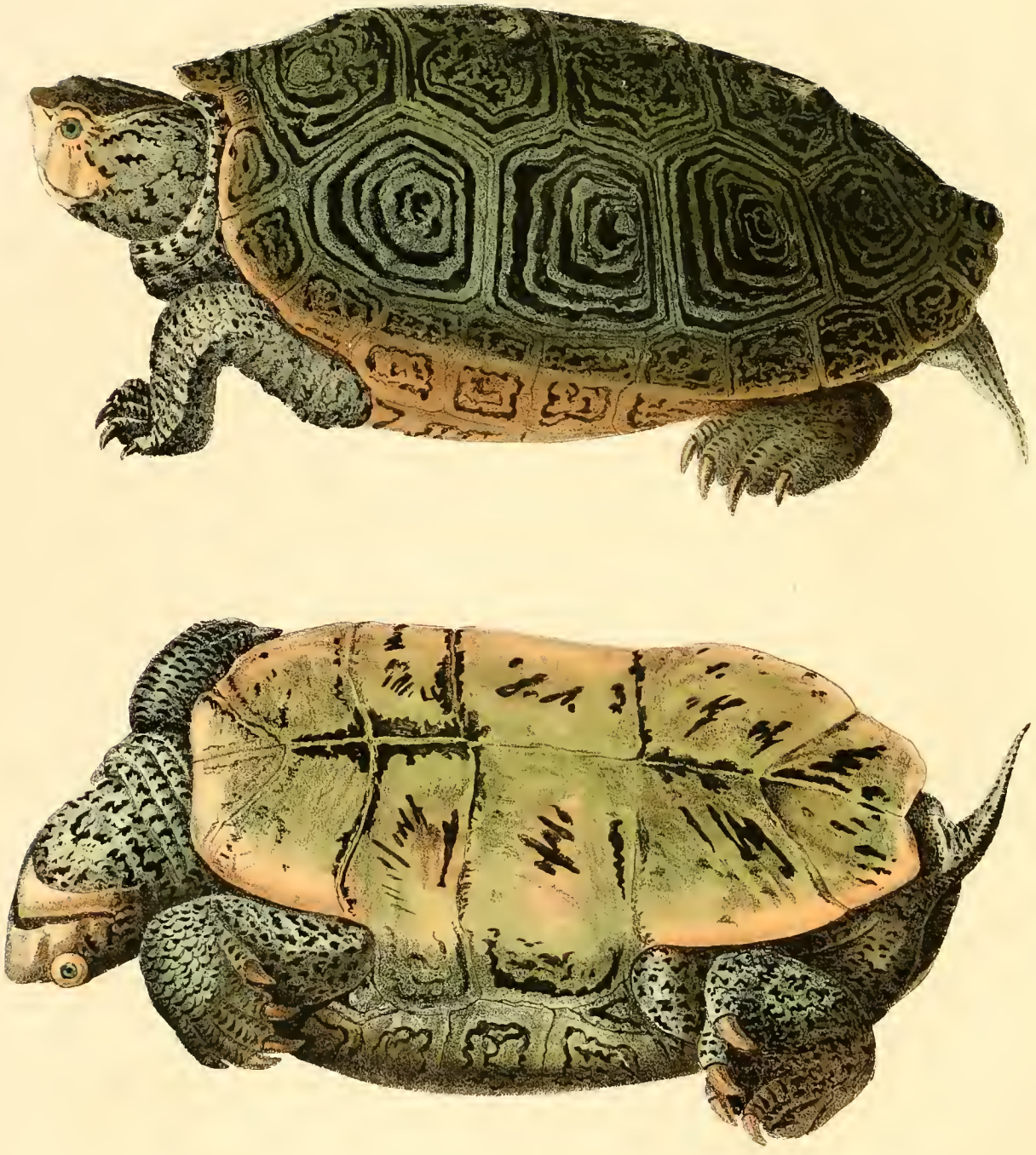
The anterior extremities are dark brown in front, with two longitudinal lines of pale yellow; one runs near the middle, the other along the superior margin: these lines are continued to the nails and to the webs, which are also yellow; the inferior surface is dusky. The posterior extremities are dusky above, irregularly marked with yellow; the convexity of the toes and the web being of the same colour. The tail is dusky above, with three yellow longitudinal lines; below, it is mottled with yellow.

Dimensions. Length of shell, 7 inches 2 lines; breadth, 5 inches; sternum, $6\frac{1}{2}$ inches; elevation, 2 inches 1 line; length of tail, $2\frac{3}{4}$ inches.

Habits. Of the habits of the Emys oregoniensis not much is known: it is said to prefer clear and running waters.

Geographical Distribution. The only locality at present ascertained of this animal is the Oregon river, and even there it is not abundant.

General Remarks. The Emys oregoniensis was brought from beyond the Rocky Mountains by Mr. Nuttall, an ardent naturalist and excellent botanist. He informs me that it is the only species of Emys he observed during a long journey, from the western border of the Rocky Mountains to the Pacific Ocean. Dr. Harlan first described this animal from the specimen now in my possession, under the name it here bears.



Emys terrapin

Drawn by G. Lehmann. Lemaire & Duval Lith.rs Paris

EMYS TERRAPIN.—*Schoepf.*

Plate II.

Characters. Shell oval, nearly entire, slightly emarginate posteriorly; depressed; obtusely carinate; dusky olive-green, and marked with darker concentric lines.

Synonymes. Testudo terrapin, *Schoepf*, Hist. Test., p. 64, tab. 15.
La Terrapène, *Lacép.*, Quad. Ovip., tom. i. p. 129.
Testudo centrata, *Latr.*, Hist. des Rep., tom. i. p. 145.
Testudo concentrica, *Shaw*, Gen. Zool., vol. iii. p. 43, pl. ix. fig. 1.
Testudo centrata, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 155.
La Tortue à lignes concentriques, *Bosc.*, Nouv. Dict. d'Hist. Nat., tom. xxxiv. p. 264.
Emys centrata, *Merrem.*, Versuch. eines Syst. der Rept., p. 26.
Emys centrata, *Schweig.*, Prod. Arch. Königb., vol. i. p. 301.
Emys centrata, *Say*, Jour. Acad. Nat. Scien. Phil., vol. iv. p. 205.
Emys centrata, *Fitz.*, Neue Class. der Rep., p. 45.
Emys centrata, *Harlan*, Med. and Phys. Res., p. 152.
Testudo palustris, *Le Conte*, Ann. Lyc. Nat. Hist., N. Y., vol. iii. p. 113.
Emys concentrica, *Gray*, Synop. Rept., p. 27.
Emys concentrica, *Dum.* and *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 261.
Salt-water Terrapin, *Vulgo.*

Description. The shell is oval, almost entire, or slightly emarginate behind, depressed, and obtusely carinate. The vertebral plates are five in number; the anterior is the largest pentagonal, with its two shortest margins directed forwards; the second, third and fourth are hexagonal, the latter very irregularly so, its posterior margin being much the smallest; the fifth is heptagonal: each of these

vertebral plates has a protuberance; that of the fourth is the most prominent; these tubercles, taken together, give an obtusely carinated appearance to the shell —some varieties have the prominences but slightly developed. Of the lateral plates, the anterior is irregularly quadrilateral, largest at its lower and anterior border, where it is joined to four marginal plates; the second and third are pentagonal; and the fourth very irregularly quadrilateral. The marginal plates are twenty-five in number; the nuchal, or intermediate, varies in shape—sometimes triangular, with its apex truncate and directed anteriorly; at others it is nearly quadrilateral; the remaining marginal plates are nearly quadrilateral; the five posterior are slightly revolute, and thus form at times a sort of gutter.

The sternum is sub-oval, entire in front, and extending even as far as the shell; it is emarginate behind, and does not reach the length of the carapace, which is covered with twelve plates marked with concentric striæ. The gular plates are triangular, with their apices directed backward; the brachial are nearly quadrilateral, the lateral margins most extensive; the thoracic and abdominal plates are oblong squares, and the sub-caudal lozenge-shaped. Of the supplemental plates, the axillary are irregularly quadrilateral and broadest before, while the inguinal are triangular and broadest behind.

The head is very large, and broadest posteriorly; narrow, and almost pointed in front; above, it presents a smooth surface, as if the head were covered with a single large rhomboidal plate, differing in some degree in colour from the rest of the animal. The jaws are strong and cutting, the superior slightly emarginate; the inferior curved in front, furnished with a hook. The eyes are small, the pupil black, the iris gray, approaching the colour of the skin. The neck is short and thick.

The anterior extremities are moderately long, and scaly before; scaly and granulate behind; the fingers are five, webbed, and each furnished with a short strong nail. The posterior extremities are rounded above, but flattened at the tarsus; scaly in front and granulate behind; there are five toes fully webbed, but four only

are furnished with nails. The tail is short, thick at the root, but small and pointed at the tip, and covered above with a row of scales, which gives it a sharp ridge.

Colour. The colour of this animal varies a good deal more perhaps than in that of any other Emys; generally speaking, it is dusky brown, though frequently it is greenish, or dark olive colour. The marginal plates are all yellowish beneath, each with a ring of dark gray colour; in the centre of this ring occurs frequently a dark spot: sometimes we find two or three of these rings placed one within the other, with intermediate yellow lines, and a yellow spot in the middle.

The sternum also varies in colour; it is generally yellowish, marked with concentric striæ and dusky lines; seldom more than two on a plate, forming squares, which are sometimes single, sometimes double, the inner line always following the figure of the outer; at other times the sternum is entirely yellow.

The crown of the head is sometimes very dark; sometimes greenish, or olive. The jaws are horn colour, mottled with dark spots, or crossed by transverse dark lines or bars. The side of the head, the neck, as well as the extremities, are dusky or greenish-white, studded with innumerable black dots; these are sometimes so disposed as to give a marbled appearance to the skin.

Dimensions. Length of shell, 7½ inches; length of sternum, 7 inches 2 lines; elevation, 2 inches 10 lines.

Habits. The Emys terrapin lives in salt water and in salt marshes, where it hybernates; far from these it is never seen. It is a timid animal, easily disturbed, and hiding itself on the least alarm. It swims with great rapidity, and, unlike its tribe in general, moves quickly even on land.

Geographical Distribution. This is a widely extended animal, abounding in marshy places from New York to Florida. I have no doubt that it exists along the northern shores of the Gulf of Mexico, although I have no positive evidence

of its existence there; yet I have received living specimens from its southern shore. This seems to be the only Emys common to North and South America, and it is not singular, when we consider that all others of its tribe live in fresh water—this alone in salt; consequently it might be driven in currents from island to island, and from one shore of the Gulf to the other, like the Chelonia or sea tortoises; and yet I have never received them from any of the West India islands, nor have I any evidence of the existence of the Emys terrapin among them.

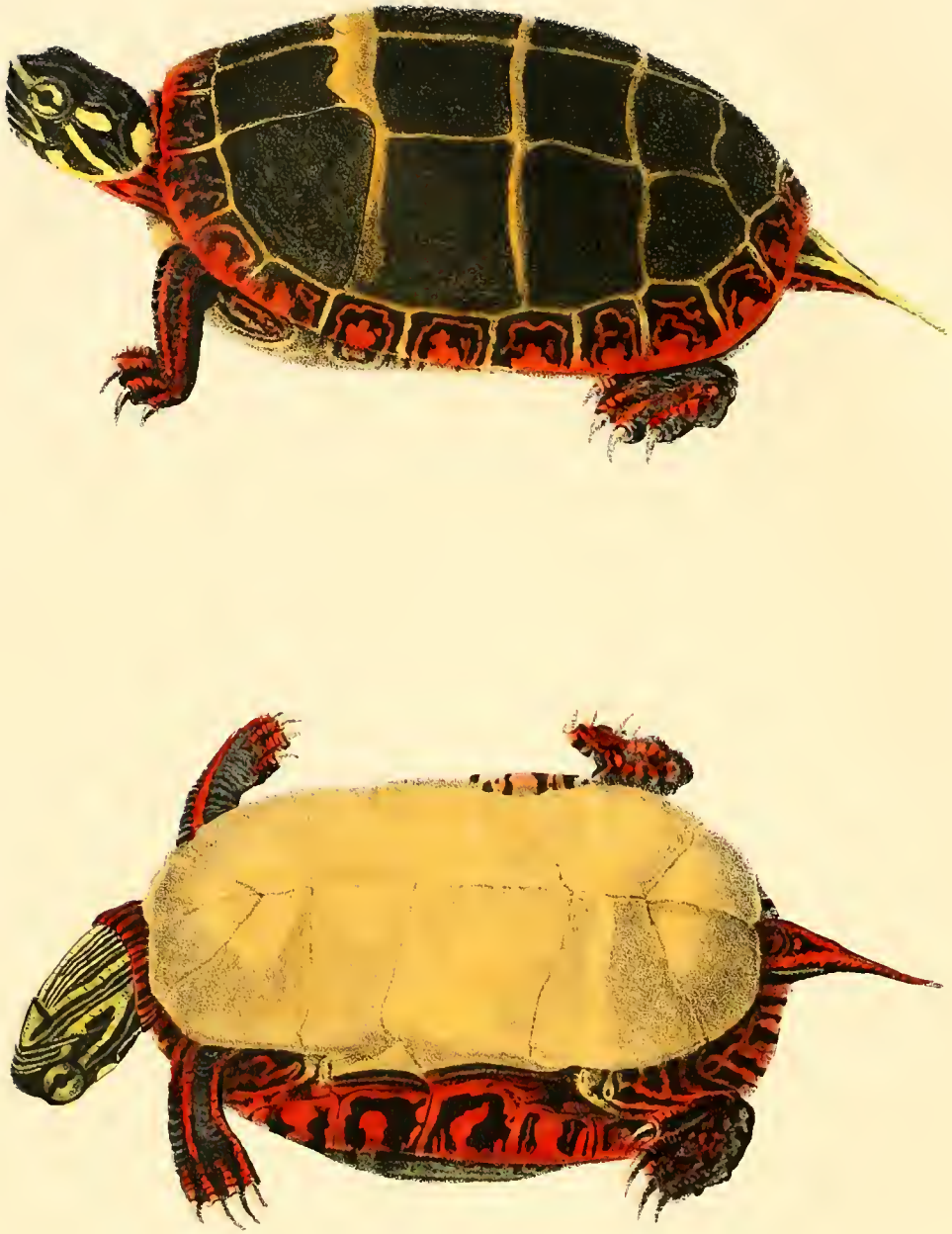
They are very abundant in the salt marshes round Charleston, and are easily taken when the female is about to deposit her eggs in the spring and early summer months. They are then brought in immense numbers to market; yet, notwithstanding this great destruction, they are so prolific that their number appears undiminished. Their flesh is excellent at all times, but in the northern cities it is most esteemed when the animal has been dug out of the mud in its state of hybernation. The males are smaller than the females, and have the concentric striæ more deeply impressed.

General Remarks. This animal was certainly first described by Schoepf, in his Historia Testudinum, and accompanied with an excellent figure. Schoepf observed it in the United States himself, where he was surgeon to a German regiment during the war of the revolution; and he also received it from Muhlenberg, who sent him specimens of many other animals. He called it Testudo terrapin, a name I have retained in this work, not because I like it—on the contrary, it is inappropriate, being in common parlance applied to the whole genus—but on account of its priority, which in every instance should rigidly be adhered to. The name centrata of the French Naturalists, or, better still, concentrica of the English, is the one I should prefer, but cannot adopt either for the reason above given.

It is possible this may be the animal mentioned by Brown,* but nothing can be positively determined from his description: "anterior extremities with five, pos-

* Civil and Natural History of Jamaica, p. 465.

terior with four toes; body of a compressed oval form, and seldom exceeds eight or nine inches in length; is often served up at gentlemen's tables and looked upon by many as good food; and frequents the lagoons and morasses of Jamaica." Yet this is all that Gmelin had to establish the species Testudo palustris in his edition of the Systema Naturæ of Linnæus. The name is well enough, and Leconte, in his excellent monograph on the North American tortoises, has retained it. Yet I cannot agree with him in considering the Testudo palustris of Gmelin and the Testudo terrapin of Schoepf as identical, and I must therefore adopt the name of the latter, as he first accurately described it.



Emys Picta

3

On Stone by G. Lehman

Lehman & Duval's Lith. Phila.a

EMYS PICTA.—*Schneider.*

Plate III.

Characters. Shell sub-oval, entire, depressed, smooth; dorsal plates black, bordered with yellow bands.

Synonymes. Testudo picta, *Schneid.*, Schildk., p. 348.
Testudo picta, *Schoepf*, Hist. Test., p. 20, tab. iv.
Testudo picta, *Latr.*, Hist. des Rept., tom. i. p. 141.
Testudo picta, *Shaw*, Gen. Zool., vol. iii. p. 45, pl. x. fig. 2.
Testudo picta, *Daud.*, Hist. Nat. der Rept., tom. ii. p. 165.
Emys picta, *Merrem*, Versuch eines Syst. der Rept., p. 23, spec. ix.
Emys picta, *Schweig.*, Prod. Arch. Konigsb., vol. i. p. 306, 431.
Emys picta, *Say*, Jour. Acad. Nat. Scien. Philad., vol. iv. p. 205.
Emys picta, *Fitz.*, Neue Class. der Rept., p. 45.
Testudo picta, *Leconte*, Ann. Lyc. Nat. Hist., N. Y., vol. iii. p. 115.
Emys picta, *Gray*, Syn. Rept., p. 26. spec. xvii.
Clemys picta, *Wagler*, Natur. Syst. der Amph., p. 137.
Emys picta, *Harlan*, Med. and Phys. Res., p. 151.
Emys picta, *Dum.* et *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 297.
Chequered tortoise, *Vulgo.*

Description. The shell is sub-oval or oblong; broadest behind; flattened, smooth, entire and ecarinate. There are five vertebral plates; the anterior is smaller than the second and third, and is nearly quadrilateral; widest in front, with its margin arched outward; posteriorly it is elongated to enter a sinus of the adjoining plate; the second, third and fourth are hexagonal, and the fifth heptagonal, with its borders of very unequal extent, greatly dilated in the transverse direction.

Of the lateral plates, the anterior are very regularly triangular, the bases being rounded and joined to five marginal plates; the second, third and fourth are quadrilateral. The marginal plates are twenty-five in number, and make one entire cutting margin; the nuchal, or intermediate, is nearly a parallelogram, slightly notched or serrated anteriorly; the first marginal plate is pentagonal, while the others are quadrilateral, the anterior and the femoral plates being largest.

The sternum is oblong, broad, and of nearly equal length with the shell; full and rounded posteriorly, with the margin entire or but slightly emarginate. The gular plates are triangular, the bases forward, and the apices directed backward; the brachial are irregularly triangular, the bases being rounded and turned outward, their apices inwards and truncate; the thoracic and abdominal are quadrilateral, broad, and rounded externally; the subcaudal are triangular, with a rounded base. Of the supplemental plates, the axillary are very small and triangular, with their apices forward; the inguinal are of the same form, but larger, and have their apices turned in the opposite direction.

The head is small, but full, and rounded in front; the snout being rather obtuse than pointed. The upper jaw is entire at the sides, but is notched anteriorly. The lower jaw is slightly hooked or turned upwards in front. The nostrils are anterior and near together. The eyes are large and brilliant; the pupil black; the iris golden, with a black band passing through it horizontally.

The anterior extremities are short, with large scales disposed transversely in front, and smaller scales, intermixed with granulations, behind; the fingers are five in number, slightly webbed, and each furnished with a short, delicate, and slightly incurvated nail. The posterior extremities are rounded above, but flattened at the tarsus, which sustains five fully palmated toes; the four internal alone are provided with nails. The tail is moderately long, narrow, and covered with ranges of scales.

Colour. The Emys picta, may easily be distinguished from all others of the

genus, by the beautiful colour and markings of the shell. In general it is of a very dark brown, yet in some varieties it is much lighter, approaching to a dark olive; along the spine is a yellow line; the vertebral and lateral plates are bordered with the same colour. In old animals these are fawn colour; but in the young they are so bright, especially when seen under water, as to resemble golden bands. These bands vary in breadth; in some specimens they are narrow, almost linear; while in others they are more than two lines in breadth. The marginal plates are all marked both above and below with a bright red spot in the centre, which is surrounded by concentric lines of the same colour; at times the upper surface of the marginal plates appears clouded with red, resembling the mineral called blood-stone.

The sternum is entirely yellow, except at the wings, where it is somewhat dusky.

The head above is dark, almost black, with several small yellow lines running from the snout to the orbit of the eye. The upper as well as the lower jaw is of dark fawn colour, marked with yellow lines; one of the lines passes through both jaws in its descent, and continues along the neck. Back of each eye is an oblong yellow spot, and another of the same colour, but still larger, is situated behind the occiput; from each of these spots is continued a longitudinal line along the neck. The neck itself is black, marked with longitudinal lines of orange and red; the throat is of the same colour, and marked with similar lines, though they are smaller and more numerous; one begins at the chin, and, after a short distance, subdivides; between this subdivision is a central line; on either side of these principal horizontal lines are others intermediate and less distinct.

The anterior extremities are black in front, with one or two red lines, the one nearest the middle being the larger; the posterior surface is dark, and mottled with orange or red. The posterior extremities are black, both above and beneath, but the dark colour is relieved by orange lines; one begins near the anus, and runs along the posterior border of the thigh. The tail is dark above, and mottled at its base with red spots; a short longitudinal yellow line runs along the inferior

surface, and a red line along the superior. The colours of this animal vary greatly in degree; they are always brightest in the young.

Dimensions. Length of shell, $6\frac{1}{2}$ inches; greatest breadth, $4\frac{1}{4}$ inches; length of sternum, 6 inches; elevation, $2\frac{1}{2}$ inches.

Habits. The Emys picta frequents ditches, ponds and pools, and is abundant in rivers, where the waters are sluggish; it spends almost the whole day basking in the sun on the banks of rivers, or on fallen trees or logs. It is very timid, and escapes rapidly when disturbed. It hybernates early, and is the first to be seen in the spring. Its food is insects, young frogs, earth worms, &c. It takes the hook readily, and is on that account very troublesome to anglers. Its flesh is sometimes eaten, but is not much esteemed.

Geographical Distribution. The Emys picta has perhaps as wide a range as any of the genus found in the United States. I have seen them along the Atlantic border, from Maine to Georgia—south of this I have no evidence of their existence. They are found in the north-western part of the country, as Dr. Pickering informs me that Mr. W. Cooper has seen them at the Saute de St. Marie, the outlet of Lake Superior.

General Remarks. This animal was first described by Schneider, under the name Emys picta, by which appellation it is now universally known to naturalists. The colour and marks of this animal being too remarkable to allow it to be confounded with any other, so is there less confusion in the synonymes than in those of any of our Emydes.

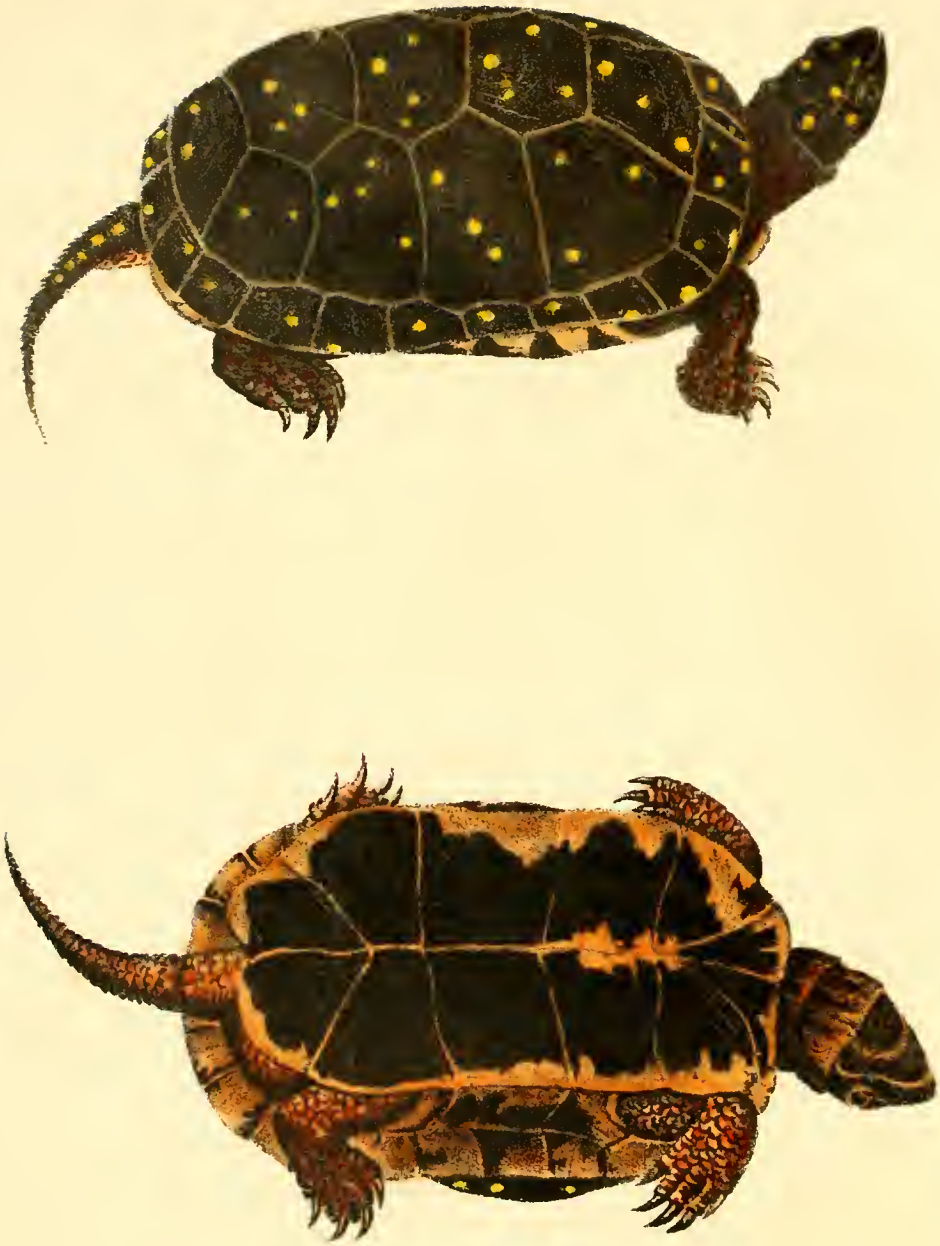
To the list of synonymes, however, I would add the *einereous* tortoise of Brown,* the Testudo cinerea of Schoepf† and other naturalists, which is certainly the young of the Emys picta, as was first determined by Palissot de Beauvais, who

* New Ill. Zool., p. 115, tab. xlviii. figs. 1, 2. † Hist. Test., p. 18, tab. v. figs. 2, 3.

had an opportunity of examining living specimens in Pennsylvania. It also seems highly probable to me that the Emys Bellii of Gray,* and of Dumeril and Bibron,† is only a variety of this animal, as I have met with specimens of the E. picta slightly depressed along the vertebral column, of a dusky-olive colour, and marked with bands, not unlike those described as belonging to the Emys Bellii.

* Synop. Rept., p. 34, spec. 21.

† Hist. Nat. des Rept., tom. ii. p. 302.



Emys guttata

EMYS GUTTATA.—*Schneider.*

Plate IV.

Characters. Shell oval, entire, smooth, ecarinate; black, with orange-coloured spots.

Synonymes. Testudo anonyma, *Schneid.*, Schildk., 2 beytr. p. 30.
Testudo guttata, *Schneid.*, Schrift. der Berl. Naturf. Fr., p. 264, b. iv. s. 3.
Testudo punctata, *Schoepf*, Hist. Test., p. 25, tab. v.
Testudo punctata, *Latr.*, Hist. des Rept., tom. i. p. 110.
Testudo guttata, *Shaw*, Gen. Zool., vol. iii. p. 47, pl. x. fig. 1.
Testudo punctata, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 159, pl. xxii.
La Tortue ponctuée, *Bosc*, Nouv. Dict. d'Hist. Nat., tom. xx. p. 265.
Emys punctata, *Merrem.*, Versuch. eines Syst. der Rept., p. 24, spec. 13.
Emys guttata, *Schweig.*, Prod. Arch. Königsb., p. 309, spec. 29.
Emys punctata, *Say*, Jour. Acad. Nat. Scien. Phil., vol. iv. p. 205.
Emys guttata, *Fitz.*, Neue Class. der Rept., p. 45.
Testudo punctata, *Leconte*, Ann. Lyc. Nat. Hist., N. Y., vol. iii. p. 117.
Clemys punctata, *Wagl.*, Nat. Syst. der Amph., p. 137.
Emys guttata, *Gray*, Synop. Rept., p. 26.
Emys punctata, *Harl.*, Med. and Phys. Res., p. 151.
Emys guttata, *Dum.* et *Biber.*, Hist. Nat. des Rept., tom. ii. p. 295.
Speckled tortoise, *Vulgo.*

Description. The shell is oval, or sub-round, more or less flattened, smooth, ecarinate, with an entire margin, or slightly emarginate behind. Of the five vertebral plates, the anterior is pentagonal, broadest in front, with two of its borders directed anteriorly; the second and third are hexagonal, their greatest extent being

in the transverse direction; the fourth is also hexagonal, with its posterior margin shortest, and often curved to receive the anterior border of the fifth vertebral plate, which is heptagonal, smaller in front and broader below. The lateral plates are four in number on each side; of these the anterior is irregularly triangular, with its apex truncated and turned upwards, and its basis rounded, directed downwards, and joined to five marginal plates; the second and third are pentagonal, with a short but acute point, which is received between two adjoining vertebral plates; the fourth is quadrilateral. The marginal plates are twenty-five in number; the nuchal or intermediate plate is very small, almost linear; the first is pentagonal, with its shortest border turned upwards and outwards; the remaining plates are quadrilateral, except the ninth, which is pentagonal, with its shortest border directed upward and forward.

The sternum is large, oval, entire anteriorly, emarginate posteriorly, and covered with twenty-four plates, generally marked with concentric striæ. The gular plates are triangular, with their bases directed forward and their apices backward; the brachial are also triangular, with their apices slightly truncated and turned inward; the thoracic and abdominal plates are quadrilateral, the former having their posterior and external angles elongated; the femoral are triangular, with their bases rounded, their apices truncate and directed inward; the caudal are rhomboidal. The supplementary plates are very minute; the axillary are of a lozenge shape; the inguinal are quadrilateral.

The head is short, smooth, and rather pointed; the upper jaw is emarginate in front; the inferior is furnished with a tooth. The eyes are large; the pupil black, the iris reddish-gray, sometimes surrounded by a circle of brighter red.

The anterior extremities are short, covered with large scales in front, and smaller scales, together with granulations, behind; the fingers are five, slightly webbed, and sustaining five short, strong, curved nails. The posterior extremities are rounded above, but flattened at the tarsus, granulated and scaly on their upper

surface; there are five toes, fully palmated, four only of which are furnished with nails. The tail is of moderate length, and slightly compressed.

Colour. The whole superior surface of this animal, the head as well as the extremities, is black, beautifully dotted with orange-coloured spots. These spots vary greatly in disposition and number, but are always present; generally there are three or four on the head and neck, and one on each marginal plate; they are most numerous on the lateral plates, varying sometimes from three to nine. The jaws are horn-colour, sometimes yellow. Besides the dark colour that prevails so universally, there is frequently a strong tinge of brick-dust colour or red on the throat and extremities. The under surface of the tail is reddish, spotted with brown; around the vent is red.

The sternum varies much in colour; in some it is yellow, in others dusky; in general the centre and borders are yellow, while the centre of each plate is marked with black blotches.

Dimensions. Length of shell, 4½ inches; greatest breadth, 3 inches; length of sternum, 4 inches; elevation, 1 inch 8 lines.

Habits. The Emys guttata is timid and gentle, and can be easily domesticated. It lives in ponds, brooks and rivers, feeding on insects, as crickets and grass-hoppers, or such other animals as it can seize, as tadpoles, young frogs, &c. It takes to the land frequently in search of food, devouring earth-worms.

Geographical Distribution. The Emys guttata, like the Emys picta, is widely extended. Leconte, who is good authority, says "over the whole United States." I have observed it on the Atlantic border, from lat. 43° to Florida, but have never seen a specimen from the western or south-western States.

General Remarks. Although in the specific character of this animal the shell is described as smooth, yet there is a variety where the lateral plates are marked

with longitudinal wrinkles; and this does not seem to depend on the age of the individual, as I have seen it both in the young and in the adult animal. Besides this, the form of the shell and distribution of the spots vary very much in different specimens. Leconte gives the following varieties:

α "Shell depressed, very little convex, wider behind; marginal plates above the hind legs very spreading; head with a few yellow spots, neck with many, particularly on the under side.

β "Shell more convex, spots on the shell large; marginal plates beneath sometimes reddish, those over the hind legs not spreading; sternum black, a little red on the middle and edges; sometimes the jaws, fore part of the throat, and a line running from the lower jaw along the side of the neck, orange.

γ "Shell convex like the last, not emarginate behind, fewer spots, rarely any on the lateral plates; plates of the disk with concentric striæ; marginal plates over the hind legs not spreading; sternum very dark brown, varied with yellow.

δ "Shell convex like the last; plates marked with concentric striæ, generally with but one orange spot on each; head with four yellow spots on the top; another at the corner of each eye, and a large one on the side of the hind part of the head, extending and growing narrower to the neck."

It is now certain that Seba* first gave a figure, and a tolerably good one too, of this animal, but unaccompanied by any description; he only says it came from Amboyna; but Seba is notoriously incorrect in the geography of his animals.

Schneider, (Jean Gottlob,) the celebrated Greek scholar of Frankfort on the Oder, appears to have been the first to describe this animal, under the name Testudo anonyma, in his Natürgeschicte der Schildkröten, a work I have never been able

* Thes., S. I. tab. 80, fig. 7.

to obtain. Yet there can be no doubt of it, for in the Transactions of the Society of the Friends of Natural History at Berlin, I find Schneider referring to this same tortoise, as well as to the figure of Seba, although he now calls the animal Testudo guttata. It may then be asked, why not retain the name Testudo anonyma, which seems to have the right of priority. The answer is this: Schneider at first was not aware that he had a new species, but seems to have regarded it as a variety of the common Testudo Europæa; but afterwards, when by comparison he had determined it to be a new and distinct species, then he called it Testudo guttata. Thus he says,* "I have received this species from the collection of Baron Bloch of Dresden, and sufficiently described it in the second supplement to the Natural History of Tortoises, p. 30–32. I was then somewhat doubtful whether or not to consider it as a variety of the common species, (Testudo Europæa,) from which it differed both in colour and in shape of the body. Now I look upon it as a new, separate species, differing from the common water tortoise principally through the firm adhesion of the sternum to the shell." Why Schoepf should have changed the name of this animal to punctata, with all these facts before him, and referring at the same time, as he did, to Schneider's work, cannot now be determined. To the name punctata there can be no objection; it is equally applicable with the other, and has been adopted by many excellent naturalists; guttata, however, has the right of priority.

* Schrift. der Berl. Naturf. Freunde, b. iv. s. 3, p. 264. Ich habe diese Art aus der Sammlung der Hrn. Baron Von Bloch erhalten, und im zweiten Nachträge zur Naturgeschichte der Schildkröten, s. 30–32; genau beschrieben ich war damals noch zweifelhaft, ob ich sie als eine Abart von der gemeinen ansehen und stellen sollte, ob ich gleich die abweichungen im Farbe und Körperbau deutlich bemerkte. Yezt sehe ich deutlich ein, dass es eine neue eigene Art ist, welche sie von der gemeinen Wasserschildkröten vorzüglich durch die vestere Verbindung des obern und untern schildes unterscheidet.

Emys serrata

3

EMYS SERRATA.—*Daudin.*

Plate V.

Characters. Shell sub-round, gibbous, carinate, longitudinally rugous, deeply serrated posteriorly; dark brown, with a sub-radiating yellow line; jaws entire.

Synonymes. Testudo serrata, *Daud.*, Hist. Nat. des Rep., tom. ii. p. 148, pl. xxi. figs. 1 and 2.
La Tortue à bords en scie, *Bosc*, Nouv. Dict. d'Hist. Nat., tom. xxxiv. p. 264.
Emys serrata, *Merrem*, Versuch. eines Syst. der Amph., p. 26.
Emys serrata, *Schweig.*, Prod. Arch. Königsb., vol. i. p. 301.
Testudo serrata, *Leeonte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 105.
Emys scripta, *Gray*, Synop. Rept., p. 29.
Yellow-bellied Terrapin, *Vulgo.*

Description. The shell is nearly round, gibbous, or very convex, emarginate, and deeply serrated posteriorly, longitudinally wrinkled, of a dark brown colour, almost black, with yellow lines and marks. The vertebral plates are five in number; the first is tetragonal, narrowest in front, with its lateral borders arched outwards, which gives it an urceolate form; the second, third and fourth, are hexagonal, the latter very irregularly so, with its posterior border re-entering; the fifth is triangular with the apex truncated, and received into the fourth, and its basis rounded and cut into four sides. Each vertebral plate has a marked prominence, elongated in the antero-posterior direction; these protuberances, when united, form a strong carina along the spine; besides these prominences, each plate, lateral as well as vertebral, is strongly marked by longitudinal wrinkles. Of the lateral plates, the anterior is irregularly triagonal, with its basis rounded and joined to five of the marginal; the second and third are irregularly pentagonal,

larger and broader below; the fourth is regularly quadrilateral. Of the twenty-five marginal plates, the intermediate, or nuchal, is very narrow, almost subcylindrical acuminate, and projecting; the first and second are pentagonal, with the two shortest sides directed backwards; they are notched in front, the first deeply, the second less so, and both project beyond the other marginal plates, the external point extends farthest. All the remaining plates are quadrilateral; and the five posterior are so deeply notched, as to give that sharply serrated appearance to the posterior margin of the shell that characterizes this species of Emys.

The sternum is oblong, full in front, but emarginate behind, and covered with twelve plates. The gular plates are triangular, their bases forwards, and their apices backwards; on the outer angle, each has a knob or process looking forwards and upwards; between these points the plates are concave, which leaves space for the neck; the brachial plates are triangular, with their apices truncated and directed inwards; the thoracic are irregularly quadrilateral; the abdominal are pentagonal, and project considerably beyond the subcaudal.

The head is of moderate size; the snout short, but rather pointed; the nostrils anterior and near together; the upper jaw almost entire, very slightly emarginate in front; the lower is furnished with a hook not well developed; the eyes are large, the pupil black, the iris golden, with a broad black stripe extending horizontally through it; the anterior extremities are of moderate extent, covered with transverse rows of large scales in front, and a few large scales and granulations behind. The fingers are five in number, each furnished with a short, strong, slightly curved nail. The posterior extremities are flattened and scaly above, and scaly and granulated below. The tarsus is broad, and sustains five toes fully palmated, four only having nails. The tail is short, thick at the root, and small, narrow, and conical at the top.

Colour. The head is black, marked with yellow lines, the largest beginning at the tip of the snout and running to the occiput. The jaws are horn colour, traversed by a yellow line which begins at the nostrils and descends downwards and

backwards, increasing in its descent, and continued all along the neck; a second line extends from the snout to a large yellow spot situated behind the cheek. The neck is dark coloured above, with stripes of yellow, which begin indistinctly about the head. At the back of each eye, is a large yellow spot, whence begin two lines of the same colour, one runs along the upper surface of the neck, the other passes below the tympanum to the throat. The throat is dusky and marked with broad yellow stripes or bands; the central is broad but not very regular; sometimes it divides and then reunites, but soon breaks again into dashes.

The colour of the shell is dark brown, approaching to black; each plate is marked with irregular yellow stripes or bands; those on the lateral plates are subradiate.

The sternum and inferior surface of the marginal plates is yellow. The gular, the brachial, and generally all the marginal plates are marked with a large, round, or oblong black spot; those on the marginal, are situated on the posterior part near the suture of the adjoining plate. In some specimens these spots exist only on the gular plates, where they are very constant.

The anterior extremities are black in front, with two or three yellow bands; these sometimes bifurcate near the toes, and are often continued into the web, which is also yellow, or they run along the convex part of the nails, giving them a yellow tinge. The yellow stripes are less regular on the inferior surface, but generally there is one large band along the posterior border. The posterior extremities are dark above, varied with yellow; the latter colour prevails on their inferior surface; many transverse bands and blotches of yellow are seen about the nates. The tail is black above, with a yellow line bifurcating near the basis; below it is yellow, with the margin of the vent black.

Dimensions. Length of shell, 12 inches; breadth, $7\frac{1}{2}$ inches; length of sternum, $11\frac{1}{2}$ inches; greatest elevation, $11\frac{1}{4}$ inches.

Habits. The Emys serrata lives in ponds and pools of stagnant water, in the neighbourhood of which it hybernates. During the spring and summer season they are seen by hundreds basking in the sun, apparently asleep. They rest on the margins of the pond, or on some little islet, or on the trunks of fallen trees, from which, when disturbed, they plunge suddenly into the water, and disappear. They live chiefly on such small reptiles as they can seize and devour; when in confinement, however, they will eat vegetable substances, of which the purslain (Portulacca oleracea) appears to be their favourite food.

Geographical Distribution. The range of this animal is very limited, reaching only from Virginia to Georgia. I have never seen them beyond these points; south its place is supplied by the Emys Floridana, north it is represented by the Emys rubriventris; nor does it reach far into the interior of the country—I am not aware of its existence two hundred miles from the coast. In the neighbourhood of Charleston they are abundant, and are brought to market in great numbers; their flesh is considered good, but it is by no means as delicate as the Emys terrapin, or the Emys reticulata.

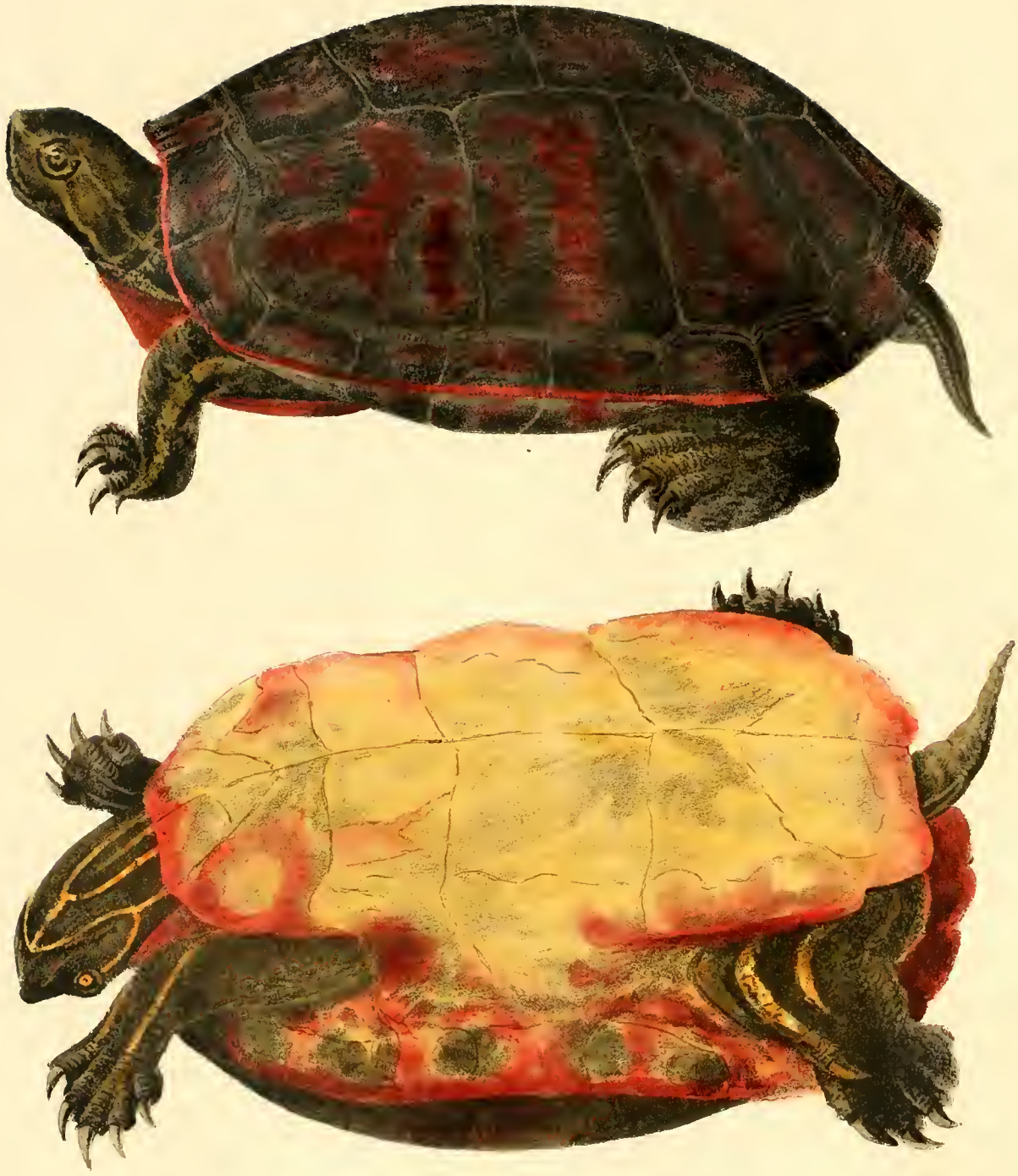
General Remarks. Daudin* was the first to describe this species of Emys under the name serrata, from a specimen furnished him by Bosc, accompanied by a tolerable plate, at least of the sternum. He speaks of it as follows:—"Bosc, the naturalist, has lent me two tortoises he brought with him from North America, which are closely allied. He has described one under the name Testudo reticulata, and I shall give the other the name of Testudo serrata, the marginal plates having each two incisions." To the list of synonymes already given, may be added perhaps the Testudo scripta of Schoepf,† which many naturalists consider the young of this species. This cannot be positively determined, for though the colour and markings of the shell agree tolerably well with Schoepf's animal, yet its form is not precisely the same, it is more elongated; and even in the very young specimens of which I have seen many, the posterior border is more or less serrated.

* Hist. Nat. des Rept., tom. ii. p. 128.

† Hist. Test., p. 16, tab. iii. fig. 2.

And further, Bosc, to whom the young of the Emys serrata must have been familiar during his long residence in Carolina, seems to have had no suspicion that the Testudo scripta was the young of any of our tortoises, inasmuch as he describes it as a distinct species.*

* Nouv. Dict. d'Hist. Nat., tom. xxxiv. p. 263.



Emys rubriventris.

6.

P.S. Duncan, Lith. Phila.

EMYS RUBRIVENTRIS.—*Leconte.*

Plate VI.

Characters. The shell is oval, elongated posteriorly; entire in front, emarginate behind; ecarinate and longitudinally rugous; sternum red; jaws denticulated.

Synonymes. Testudo rubriventris, *Leconte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 101.
Emys serrata, *Say*, Jour. Acad. Nat. Scien. Philad., vol. iv. p. 204.
Emys serrata, *Harl.*, Med. and Phys. Res., p. 154.
Emys serrata, *Gray*, Syn. Rept. p. 29, spec. xxiv.
Emys irrigata, *Bell*, Manuscript Notes.
Emys rubriventris, *Dum.* et *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 281.
Emys irrigata, *Dum.* et *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 276.
Potter or Red-bellied Terrapin, *Vulgo.*

Description. The shell is oval, much elongated, and broadest at its posterior part; convex ecarinate; full and entire in front, but emarginate behind. There are five vertebral plates; the anterior is urceolate, hexagonal, and smallest in front; the second, third and fourth are also hexagonal, the latter irregularly so, with its posterior margin re-entering; the fifth is heptagonal, its anterior margin convex and projecting into the fourth plate. The first lateral plate is triangular, its basis rounded and directed downwards; the second and third are pentagonal; the fourth is sub-rhomboidal, with its inferior margin angled; all these plates are longitudinally rugous. There are twenty-five marginal plates; the nuchal is quadrilateral, elongated, narrowest at its anterior margin, where it is sometimes finely serrated. The first marginal plate is irregularly quadrilateral, broadest in front, narrow and rounded behind; the second is also quadrilateral, with its internal and superior

angle greatly elongated; all the other plates are regularly quadrilateral, those over the thighs broadest; the posterior and external angle of the ninth projects slightly beyond the tenth, which in turn extends beyond the eleventh, and the latter beyond the twelfth. The projection of these angles gives the shell a slightly serrated appearance.

The sternum is oblong, entire in front, but emarginate behind. The gular plates are triangular, with their apices turned backwards; the brachial are also triangular, with rounded bases externally, their apices truncate, and directed inwards; the thoracic are quadrilateral; the abdominal broad and pentagonal; the femoral are irregularly quadrilateral, with their narrowest border directed internally, and their posterior and external borders projecting beyond the subcaudal plates, which are triangular, with their bases rounded and directed backwards. Of the supplemental plates, the femoral are trapezoid in shape, prolonged and pointed anteriorly; the axillary are irregularly triangular and largest in front.

The head is of moderate size, a little enlarged posteriorly, and slightly pointed at the snout; the jaws are strong, the upper so deeply emarginate as to present the appearance of having two teeth. The inferior is serrated at the sides, and has three teeth in front, of which the middle or hook, is most prominent, as if made to pass into the deep notch of the upper jaw. The eyes are large and prominent; the pupil black; the iris pale golden, with a black band passing longitudinally through it.

The anterior extremities are rather long, and covered with transverse rows of scales in front, and with scales and granulations behind; there are five fingers, palmated with five short, slightly curved nails. The posterior extremities are round at the thighs, but much flattened towards the tarsus; the toes are five, and fully palmated, but only four of them are furnished with nails. The tail is short and large at its base, but becomes suddenly pointed.

Colour. The shell is dusky brown, marked with blotches or confluent spots,

and irregular bands or lines of red; each marginal plate has a line of the same colour passing vertically through it.

The sternum is red, generally clouded with a dusky shade. The inferior surface of the marginal plates is also red, with dusky spots running into one, at the junction of the plates. The wings are sometimes barred with black.

The head and neck are dark brown above, with obscure red lines; the jaws are horn colour, with a red line beginning below the nostrils, and running through the upper to the lower jaw; two others begin at the back of the orbit of the eye—one extends to the neck above the tympanum, the other passes beneath it. The throat is dark, marked with large bands of red; one of these begins midway between the chin and the articulation of the jaw; another begins at the chin, but soon bifurcates; and between this bifurcation is a third and shorter line.

The anterior extremities are dusky brown, with two reddish lines on the superior surface, these lines are in some individuals yellow; the inferior surface is dusky, with similar red or yellow lines. The posterior extremities are dusky, with interrupted lines of red or yellow; the webs are tinged with red both on the upper and lower surface.

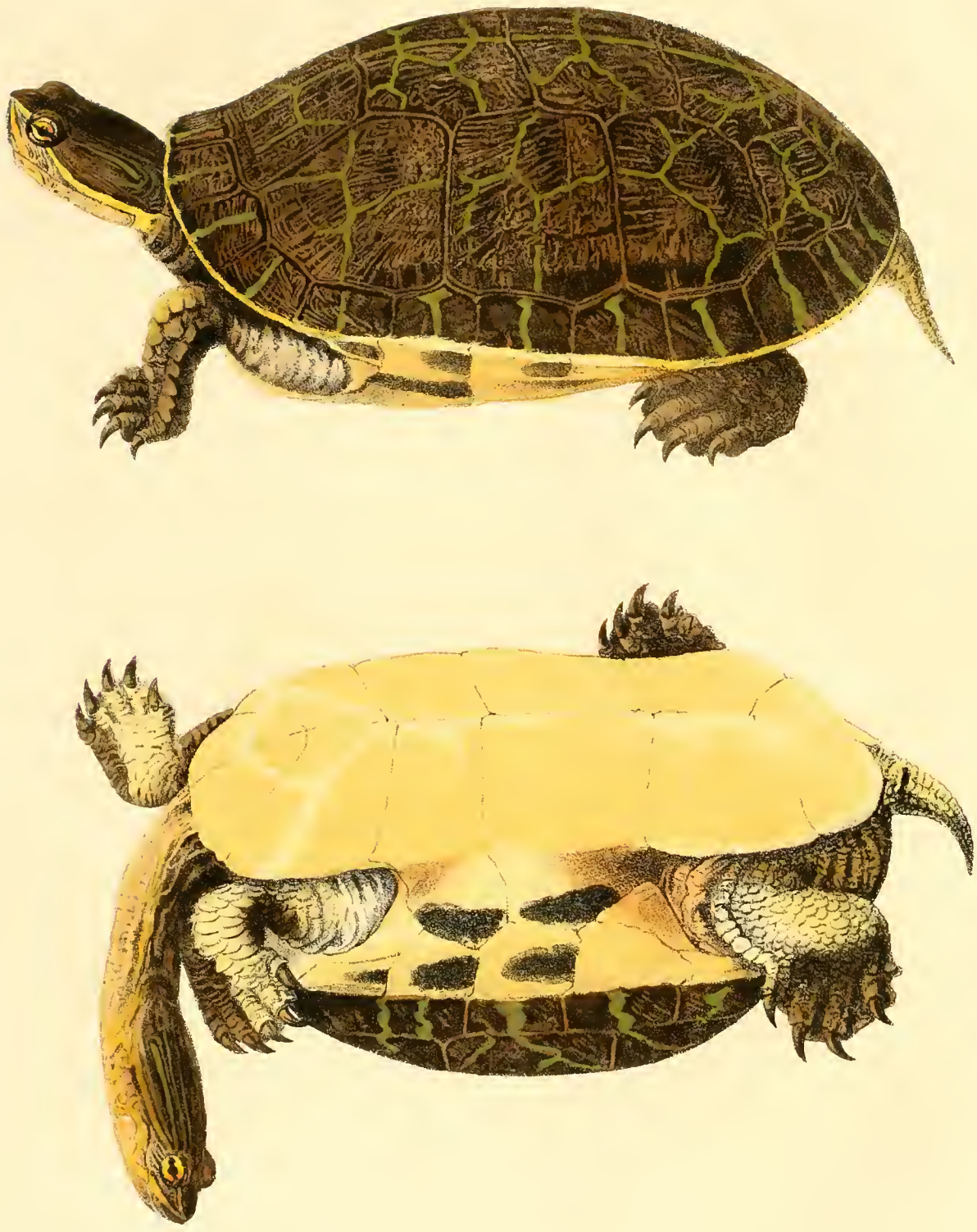
Dimensions. Length of shell, 11 inches; greatest breadth, 7 inches; length of sternum, $10\frac{1}{2}$ inches; greatest elevation, $4\frac{3}{4}$ inches; length of tail, 2 inches.

Habits. The Emys rubriventris inhabits streams and rivers of running waters, generally preferring those with rocky beds.

Geographical Distribution. Its geographical range is very limited; as yet it has not been found north of the Delaware river, nor south of the Chesapeake Bay. It is common in the Susquehanna and its tributaries, but is much more abundant in the Delaware, especially in the neighbourhood of Trenton. It is frequently

brought to the Philadelphia market, from both these localities, though its flesh is not greatly esteemed.

General Remarks. Leconte was certainly the first who described this animal under the name it now bears; for although it is referred to in the works both of Say and Harlan, yet it is evidently confounded with the Emys serrata of Bose, to which it bears no resemblance; as it is ecarinate, and the posterior border of the shell not serrated; nor can there be any doubt that this is the Emys irrigata of Bell, and of Dumeril and Bibron; for I have seen, through the kindness of Mr. Bell, his specimen under this name, as well as those in the Garden of Plants at Paris, from which Dumeril and Bibron took their description, and I could discover no difference between them and the Emys rubriventris. The difference of colour in the shell and sternum, given by Dumeril and Bibron, cannot determine the animal, for their description was taken from dead specimens, and it is well known that the red both of the shell and sternum becomes of a dusky yellowish-white in specimens that have been preserved for any length of time.



Emys reticulata.

7

EMYS RETICULATA.—*Bosc.*

Plate VII.

Characters. Shell oval, convex, ecarinate, entire, longitudinally rugous; olive brown, reticulated with yellow lines.

Synonymes. Testudo reticulata, *Bosc*, Manuscript Notes, communicated to Daudin.
Testudo reticulata, *Daud.*, Hist. Nat. des Rept., tom. ii. p. 144, pl. xxi. fig. 3.
Testudo reticularia, *Latr.*, Hist. des Rept., tom. i. p. 124.
La Tortue reticulaire, *Bosc*, Nouv. Dict. d'Hist. Nat., tom. xxxiv. p. 265.
Emys reticulata, *Schweig.*, Prod. Arch. Konigsb., tom. i. p. 300, spec. 10.
Emys reticulata, *Merrem.*, Versuch. eines Syst. der Amph., p. 26.
Emys reticulata, *Say*, Jour. Acad. Nat. Scien. Phil., vol. iv. p. 204.
Testudo reticulata, *Leconte*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 103.
Emys reticulata, *Fitz.*, Neue Class. der Rept., p. 45.
Emys reticulata, *Harl.*, Med. and Phys. Res., p. 158.
Emys reticulata, *Dum.* et *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 291.
Chicken Tortoise, *Vulgo.*

Description. The shell is oval, broadest posteriorly, very convex, ecarinate and entire, or but slightly submarginate behind, and longitudinally rugous. There are five vertebral plates; the anterior almost pentagonal and broadest in front; the second and third are hexagonal; the latter concave on its posterior border; the fourth hexagonal, broader, and rounded on its anterior surface to fit the posterior margin of the third vertebral plate, and is narrow and sometimes emarginate behind; the fifth is heptagonal, rounded inferiorly and posteriorly, and joined to two whole and two half marginal plates. The first lateral plate is

large and sub-rhomboidal; the second and third are pentagonal, the superior angle most acute; the fourth is quadrilateral. There are twenty-five marginal plates, which form a simple cutting border, in general without serræ, though there is sometimes a small notch between the supra-caudal plates; the nuchal, or intermediate, is very small, oblong, or nearly a parallelogram in shape. The remaining plates are quadrilateral; those situated in front or over the thighs are largest.

The sternum is oblong, nearly of the same size at both extremities; full and rounded in front, emarginate behind. The gular plates are triangular, with their bases forward and rounded, and their apices directed backwards; each has a remarkable prominence on its upper surface, near the outer angle of the base; between these knobs the plates are hollow for the neck; the brachial are quadrangular, broader and rounded externally, narrow and straight within. The thoracic plates are quadrilateral, elongated in the transverse direction; the abdominal are broad and pentagonal; the femoral large and quadrilateral; the subcaudal hexagonal, with a rounded basis directed posteriorly. Of the supplemental plates, the axillary are small and triangular, with their apices turned backwards; the inguinal are larger, rhomboidal, broadest behind, narrow and pointed before.

The head is small, long and narrow, with the snout a little pointed; the nostrils are anterior. The upper jaw is slightly emarginate; the lower is entire, and furnished with a hook in front. The eyes are prominent and large, the pupil black, the iris golden, with a black band passing longitudinally through it. The neck is of great length.

The anterior extremities are rather short and rounded; the fore-arm covered with large scales, disposed in transverse lines, and a row of square fleshy folds along the superior border; its posterior surface is scaly and granulated; there are five fingers, palmated, sustaining five short, strong, slightly curved nails. The posterior extremities are also covered with scales, but they are smaller than those of the anterior; the tarsus is flattened, and sustains five fully palmated toes, four

only of which are furnished with nails. The tail is short, thick, scaly, and pointed at the tip.

Colour. The shell is dark brown, with a yellow vertical line from its anterior to its posterior extremity. All the plates of the shell are marked with yellow lines; those of the vertebral and lateral plates run frequently into each other, and finally descend perpendicularly through each of the marginal plates, dividing them into anterior and posterior portions. These lines communicate so frequently as to give a reticulated appearance to the shell; they are often less distinct on the vertebral and lateral plates than is represented in the accompanying figure, which was drawn from a specimen of great beauty. On old shells, these lines are nearly obliterated, or are only brought into view when the shell is moistened; nor can they be traced as continuous with those of the marginal plates.

The sternum is yellow, as well as the inferior surface of the marginal plates, the fourth and fifth of which, and sometimes the sixth, are marked with an oblong or round black spot; below these spots on the wings is a broad black bar. Much variety, however, exists in this marking; frequently only two of the marginal plates have the black spots, and a third is placed on the posterior part of the wings; at others the wings are marked with a black bar alone, and there are no spots on the marginal plates.

The anterior extremities are black above or dark brown, marked with a broad longitudinal yellow band continued to the toes, the webs of which are also yellow; the inferior surface is dusky, and marked with transverse yellow bands and bars; these are by far the more numerous and distinct about the shoulder. The posterior extremities are dusky above, with large bands and blotches of yellow; the posterior surface of the thigh is yellow, with transverse bars. The tail is black, with three longitudinal yellow lines; the margin of the vent is yellowish.

The skin of the head and neck is dark brown on the superior surface, with numerous small longitudinal yellow lines. These lines vary in extent; some reach

the whole length of the neck; others are intermediate, less distinct, and shorter; a remarkable one begins at the snout and runs between the eyes, terminating at the occiput; another and still larger begins at the snout, below the nostrils, descends to the angle of the mouth, increasing in size to the neck; other lines are also seen to begin at the back of the eyes and run along the neck; a distinct line begins above the orbit and runs to the tympanum. The jaws are horn-colour, marked with yellow lines that traverse them obliquely. The throat is dusky-yellow, with three longitudinal lines of brighter yellow and waving lines of a dingy brown.

Dimensions. Length of shell, 9½ inches; breadth, 5½ inches; length of sternum, 8 inches 10 lines. The head and neck, taken together, are nearly as long as the sternum.

Habits. The habits of the Emys reticulata are very similar to those of the Emys serrata. They inhabit ponds and stagnant waters, where they may be seen slowly swimming from place to place; and as the head and neck alone are visible, they might be easily mistaken for the water-snake, which belongs to the same locality; or they may be observed in great numbers basking on the trunk of some fallen tree, from whence they plunge into the water on the slightest alarm—the noise of the splash of one disturbs its neighbours, who all rapidly disappear. Being of so timid a nature, taking them is a work of some difficulty; they are, however, frequently brought to our markets, where they are more prized than the Emys serrata.

Geographical Distribution. The Emys reticulata has a range of small extent. Leconte gives Fayetteville, North Carolina, as its northern limit, and I would assign Georgia as its southern, as I have no evidence of its existence in Florida; nor do they ever appear at any distance from the seaboard.

General Remarks. There can be no doubt that Bosc first observed this animal in Carolina, and that he furnished a manuscript description of it to Daudin,* under

* Hist. Nat. des Rept., tom. ii. p. 144.

the name it now bears, which has been very generally received by naturalists. In fact, the very specimen from which Daudin took his description is still preserved in the Garden of Plants at Paris.* I have no hesitation in putting the Emys reticulata of Say among the synonymes of this animal, although Leconte, Dumeril and Bibron suppose it to refer to the Emys concinna. The very description of Say is sufficient to show the animal he meant: "shell ovate, posterior marginal plates entire, lateral ones beneath with three black spots over the suture; sternum very narrow, elongate and oval."† Furthermore, he says,‡ the only specimen he ever saw was in the Philadelphia Museum, and that it corresponds well with the figure of Daudin. Besides this, Mr. Peale, the proprietor of the Philadelphia Museum, showed me the identical specimen from which Say took his description, on which was marked in his own hand-writing, Emys reticulata.

* Leconte, Ann. Lyc. Hist. Nat. N. Y., vol. iii. p. 108.

† Say, Jour. Acad. Nat. Scien. Phil., vol. iv. p. 204.

‡ Jour. Acad. Nat. Scien., vol. iv. p. 109.

Emys Floridana.

s.

pinx. On Stone by G. Lehman Lemercier & Duval Lith.r Philad.a

EMYS FLORIDANA.—*Leconte.*

Plate VIII.

Characters. Shell sub-oval, compressed at the sides, entire; longitudinally rugous, slightly carinated posteriorly; nuchal plate triangular, entire; jaws without teeth.

Synonymes. Testudo floridana, *Leconte,* Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 100.
Emys floridana, *Harl.,* Med. and Phys. Res., p. 155.
Emys floridana, *Dum.* et *Bibr.*, Hist. Nat. des Rept., tom. ii. p. 285.

Description. The shell is moderately gibbous, most so in the centre; it is sub-oval, more or less compressed at the sides, with the margin entire; or it may be sometimes very slightly emarginate behind, with a small carina along the third, fourth and fifth vertebral plate. The anterior vertebral plate is urceolate, irregularly quadrilateral, with its sides anti-parallel; in front it has three articulating borders; behind, it is convex, and received into the second vertebral plate; the second and third are hexagonal, with their lateral angles salient; the fourth is heptagonal, and projecting in front; the fifth is also heptagonal, but the sides are so disposed as to give it a triangular figure, with base and apex rounded. The first lateral plate is triangular, with a rounded base; the second and third are hexagonal, and have greater elevation than breadth; the fourth is quadrilateral; all these plates are longitudinally rugous. There are twenty-five marginal plates; the nuchal or intermediate, is nearly triangular, broadest behind; the anterior plate is pentagonal, and broadest before; the remaining plates are all very regularly quadrilateral, except the fifth, seventh and ninth, which are pentagonal.

The sternum is oblong, entire in front, and emarginate behind. The gular plates are triangular, a little projecting at their outer angles; the brachial are also triangular, their bases rounded, and their apices truncated and turned inwards; the thoracic, abdominal and femoral plates are large, oblong, and quadrilateral; the subcaudal are rhomboidal.

The head is of moderate size; the snout rather obtuse; the nostrils anterior; the eyes prominent, large, and very beautiful; the pupil black; the iris golden, with a black band passing longitudinally through it. The jaws are strong, with their cutting margins entire, without serræ, or teeth; the inferior is very slightly hooked.

The anterior extremities are large, covered with scales in front, and with scales and granulations behind; there are five fingers, palmated, and each furnished with a stout, strong and nearly straight nail. The posterior extremities are rounded at the thigh, but greatly spread out at the tarsus; the toes are five, fully palmated, but four only of them are furnished with nails. The tail is short.

Colour. The shell is brown, with numerous lines and bands of yellow; those of the vertebral plates run longitudinally; of those on the lateral plates, some radiate, while others descend vertically. All the marginal plates are traversed by vertical bands or lines of the same yellow colour.

The sternum, as well as the inferior surface of the marginal plates, is pale yellow; the latter with each a black spot, including one of yellow.

The head and neck are dusky above, and striped with yellow; one very distinct line begins at the snout, runs under the eyes, and terminates at the occiput. The jaws are horn colour; a yellow line begins below the nostrils, and reaches to the angle of the mouth; two others begin back of the orbit, and run to the neck, one above and the other below the tympanum. The throat is cinereous, striped with yellow lines; a broad line begins at the chin, and bifurcates a short distance from

its origin; a second narrower and shorter line is included in the bifurcation, and others are situated on the outer side of it.

The anterior extremities are dark above, with cuticular folds along the outer margin tinged with pale yellow; the inferior surface is rather lighter and marked with longitudinal bands of a pale yellow. The anterior extremities are dark above, striped with pale yellow bands, both above and below. The tail is striped with pale yellow above, and is dirty yellow below.

Dimensions. Length of shell, 15 inches; greatest breadth, 10 inches; length of sternum, 14 inches; elevation, $7\frac{1}{4}$ inches.

Habits. The Emys floridana inhabits rivers and lakes of fresh water, but of its food I am ignorant.

Geographical Distribution. As yet, this animal has been found only in East Florida. It is common in the St. John's river, from whence I have received a good many specimens.

General Remarks. The Emys floridana is the largest of the genus with which I am acquainted; this beautiful animal was first observed by Leconte in Florida, who gave an excellent description of it in his Monograph on the North American tortoises. I am gratified in being able to give very accurate drawings of the four last species of Emys; the more so, because Harlan and some other naturalists, have thought them not sufficiently distinct. Harlan* says he has not been able to distinguish the Emys serrata from the Emys reticulata, Emys scripta, Emys rubriventris, and Emys decussata; nor the Emys floridana from the Emys rubriventris; and yet they are all perfectly distinct species, as they have been here described.

* Med. and Phys. Res., p. 155.

I. They differ so much in colour and markings, as may be seen in the accompanying plates, that this of itself would be almost sufficient to distinguish them in the living animals.

II. They differ greatly in size.

III. In geographical distribution.

IV. In the various characters of the head, jaws, and shell, as heretofore described.

The Emys serrata has the jaws without serræ, the upper slightly emarginate in front, the posterior margin of the shell deeply serrate; inhabits the Carolinas.

The Emys rubriventris approaches nearest to it, but has the upper jaw so deeply emarginate in front as to present the appearance of two teeth; and the lower deeply serrated, and toothed in front; inhabits from Western Jersey to Virginia; these two animals are nearly of the same size.

The Emys reticulata is widely different; it has the upper jaw emarginate in front; lower one hooked; shell perfectly entire; inhabits the Carolinas.

The Emys floridana comes nearest the Emys reticulata, in its characters, but is still perfectly distinct; the upper and lower jaws are both entire, without hook or serræ; shell entire. This animal is six or eight times the size of the reticulata; inhabits East Florida.

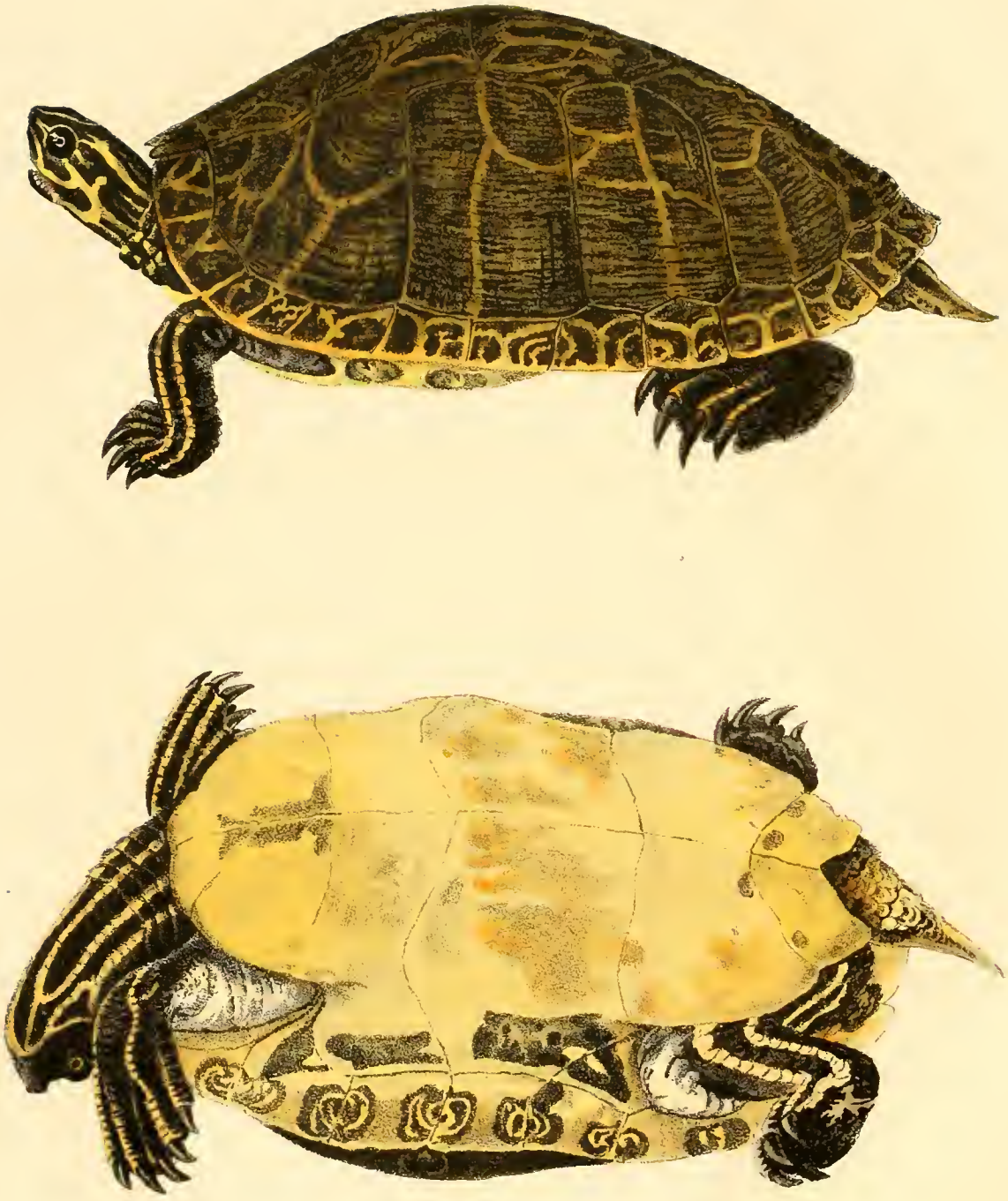
The Emys scripta, if a North American tortoise, is the young of the Emys serrata.

The Emys decussata (Bell and Gray*) has not been found in the United States,

* Gray Synop. Rept., p. 28, spec. xxii.

but is common in the West India islands. Dr. Cocteau, an excellent herpetologist in Paris, shewed me numerous specimens from Cuba, whence they were brought by M. Ricord; and Mr. Bell, so well known by his great work on the Testudinata, gave me a specimen of it that he had received from one of the West India islands. It is very fairly the representative there of our Emys serrata, from which it differs, however, specifically, by the uniformity of its colour, and by the decussating rugæ of the shell.

If I were to add a synonyme to those already given, it would be the Emys ornata of Bell and other naturalists, for my friend Bibron shewed me the shell of an animal that served him in part for the description of the Emys ornata, which very much resembles the Emys floridana.



Emys Mobilensis

Sera minat

On Stone by C Lehman

P.S. Duval Lith's P

EMYS MOBILENSIS.

Plate IX.

Characters. Shell oval, convex, ecarinate; convex anteriorly, depressed posteriorly, entire in front, emarginate and subserrate behind; jaws serrated; inferior furnished with a hook.

Description. The shell is regularly oval, broadest and flattened posteriorly; convex, entire in front, but emarginate and sub-serrate behind. Of the five vertebral plates, the anterior is urceolate, smallest in front, with three articulating margins, larger behind, and convex; the second, third and fourth are hexagonal; the third slightly concave on its anterior margin; the fourth smaller and concave on its posterior; the fifth is irregularly triangular, its apex rounded, and directed upwards, and its basis cut into four articulating margins. The lateral plates are very large, the anterior triangular, the second and third pentagonal, and the fourth quadrilateral; all these plates are longitudinally rugous. The marginal plates are twenty-five in number; the nuchal is a parallelogram; the first is irregularly quadrilateral, rounded posteriorly, broad and straight anteriorly; the second is also quadrilateral, with its superior internal angle greatly elongated, to enter between the first marginal and first dorsal plates; all the remaining marginal plates are quadrilateral, the posterior and internal angle of the three last are salient, which gives a slightly serrated appearance to the shell, at its posterior margin; all these plates, except the intermediate and anterior, are marked with one or more concentric striæ, at the junction of the lateral and vertebral plates.

The sternum is oblong, full, and entire in front, and emarginate behind. The

gular plates are triangular, with rounded bases, and their external and anterior angles projecting; the brachial are quadrilateral, the smallest border directed inwards; the thoracic are quadrilateral, and elongated transversely; the abdominal are broad and hexagonal, narrowest externally; the femoral are quadrilateral, with the shortest border directed internally; the subcaudal plates are rhomboidal, the anterior angle prolonged. Of the supplementary plates, the axillary are irregularly quadrilateral; the anterior angle elongated and pointed; the femoral is also quadrilateral, broadest anteriorly, with the anterior and external angle greatly prolonged.

The head is rather large, the snout pointed. The eyes are of moderate size; the pupil black; the iris reticulated, with black and yellow lines. The upper jaw is serrated throughout its whole extent, as well as the lower, which is furnished with a hook.

The anterior extremities are strong, covered with large scales in front, and scales and granulations behind; there are five fingers, palmated, and furnished each with a short, strong, nearly straight nail. The posterior extremities are long, round at the thigh, much flattened at the tarsus; the toes are five, palmated, but four only are furnished with nails. The tail is short, thick at the root, but soon becomes small and pointed.

Colour. The vertebral and lateral plates are brown, reticulated with yellow lines. The marginal plates are likewise brown, with each a yellow line, which begins at the centre of the inferior margin, and runs to the middle of the plate, where it bifurcates; one portion runs forward, and the other backward, and as the lines of the neighbouring plates meet, the margin has the appearance of being festooned.

The sternum is yellow, as well as the inferior surface of the marginal plates; each of these is marked by a large black blotch, at its junction with the neighbouring plate; in the centre of each blotch is a yellow spot, with two concentric

lines of the same colour; below these is frequently a black bar; the supplemental plates are also marked by a black blotch.

The head is dusky brown above, marked with longitudinal yellow lines; one begins at the snout, and runs along the crown of the head to the occiput; smaller lines run on each side of this; another line begins at the superior and inferior border of the orbit; this increases till it becomes a band, and runs along the neck; two other lines come from the orbit, one runs to the neck, above, the other below the tympanum, where it is continuous with a large line that comes from the lower jaw. The throat is ash colour, marked with three broad yellow lines; one begins at the chin, and soon bifurcates; in this bifurcation is included the third line.

The anterior extremities are dusky in front, with longitudinal yellow lines; the margins of the web are yellow; the posterior surface is marked with blotches and bands of yellow. The posterior extremities are dark in front, with longitudinal lines of yellow; on the inferior surface the yellow colour prevails over the dusky. The tail is dusky with longitudinal yellow stripes.

Dimensions. Length of shell, 15 inches; greatest breadth, 9½ inches; length of sternum, 14¼ inches; greatest elevation, 6 inches.

Habits. I have had no opportunity of observing the habits of this animal; but from the shape and form of the extremities, it would seem to be eminently aquatic.

Geographical Distribution. As yet, Alabama is the only state in which this animal has been found; it doubtless inhabits many others. It is numerous in the neighbourhood of Mobile, where it is greatly esteemed as an article of food.

General Remarks. This is another fine species of Emys, being next to the Emys floridana in size, and which in fact it almost equals. Leconte informs me

that he has observed it many years ago in Alabama, and proposed calling it Emys Mobilensis, to which I have no objection. I have been informed that it is not unfrequently sent to the New Orleans market, where it is known under the name Mobilianer.

This animal is perhaps most nearly allied to the Emys rubriventris, from which, however, it differs specifically; in this species both jaws are finely serrated; the shell is not compressed at the side, it is more elevated in front, and more depressed, and broader behind; the shell is brown, reticulated with yellow lines; it is more than twice the size of the rubriventris, and has never yet been found within seven hundred miles of its locality.

Salamandra dorsalis.

10.

Sera nat.[t] *P.S.Duval, Lith.r Phil.a*

SALAMANDRA.—*Brogniart.*

Genus Salamandra.—Characters. Body elongated; tail long; extremities four; fingers four; toes five; no tympanum; numerous small teeth in the jaws and palate; tongue as in frogs; no sternum; ribs rudimental; pelvis suspended by ligaments.

SALAMANDRA DORSALIS.—*Harlan.*

Plate X.

Characters. Head and body above, olive colour, with a tinge of green; on each side of the mesial line is a row of bright, circular, vermilion spots; throat and abdomen orange, studded with small black dots; tail longer than the head, neck, and trunk; sides greatly compressed throughout its whole extent.

Synonymes. Salamandra dorsalis, *Harl.*, Jour. Acad. Nat. Scien. Phil., vol. vi. p. 101.

Description. The head is short, broad behind, and rather pointed at the snout; the nostrils are anterior; the eyes are full and prominent; the pupil black; the iris flame colour; the neck and body are the same size as the head, and cylindrical in form.

The anterior extremities are small and delicate, and terminate in four small fingers; the posterior extremities have more than twice the bulk of the anterior,

and terminate in five short flexible toes. The tail is thick at the root, but soon becomes compressed at the sides throughout its whole extent.

Colour. The whole superior surface of the Salamandra dorsalis, neck, head, and body, as well as the tail and extremities, is of an olive colour, with a strong tinge of green; on each side of the vertebral line is a row of bright or red spots, symmetrically disposed; these spots vary a good deal in size in different individuals, but their colour is almost always the same. The inferior surface of the animal, throat, abdomen and tail, as well as the anterior and posterior extremities, is orange, studded with small black dots about the abdomen and throat.

Dimensions. Length of head and neck, to anterior extremities, 7 lines; length of body, 1 inch $2\frac{1}{4}$ lines; length of tail, 2 inches; total length, 3 inches $9\frac{1}{2}$ lines.

Habits. The Salamandra dorsalis, is eminently aquatic in its habits; I have never heard of its being found on land, and indeed when taken from its native element, the water, its progression is difficult, its skin becomes dry, and it soon dies. In water it is very hardy, supporting great cold, and is torpid only during the excessive cold of winter; for I have frequently observed them under ice of an inch thickness, swimming with great vivacity.

Geographical Distribution. This animal is found from one end to the other of the Atlantic States; I have seen it in Maine, Pennsylvania, and Georgia.

General Remarks. The Salamandra dorsalis was first described by Harlan.

Salamandra Symmetrica

11.

Drawn from nature by

On Stone by C. Lehman

Published

SALAMANDRA SYMMETRICA.—*Harlan.*

Plate XI.

Characters. Head, body and tail reddish-brown; throat and abdomen orange colour; a row of deep red spots on each side of the abdomen symmetrically arranged; tail longer than the body, small and compressed; skin rough.

Synonymes. Salamandra symmetrica, *Harl.*, Jour. Acad. Nat. Scien. Phil., vol. v. p. 158.
Salamandra stellio, *Say*, Amer. Jour. of Arts and Scien., vol. i. p. 264.

Description. The head is short, the snout rather pointed; the nostrils are anterior. The eyes are small, but beautiful; the pupil black, the iris flame colour; the neck is about the size of the head. The body is cylindrical, slightly compressed at the sides; and the whole animal is covered with a rough cuticle.

The anterior extremities are small and delicate, terminating in four slender fingers; the posterior have twice the bulk of the anterior, and terminate in five short flexible toes. The tail is thick at the root, but soon becomes flattened, small, and terminates in a point.

Colour. The whole superior surface of the head, neck, body and tail, as well as the anterior and posterior extremities, is reddish-brown; the inferior surface of the throat and abdomen is reddish-orange, with black dots; the inferior surface of the tail is the same as the superior, but with a glow of orange.

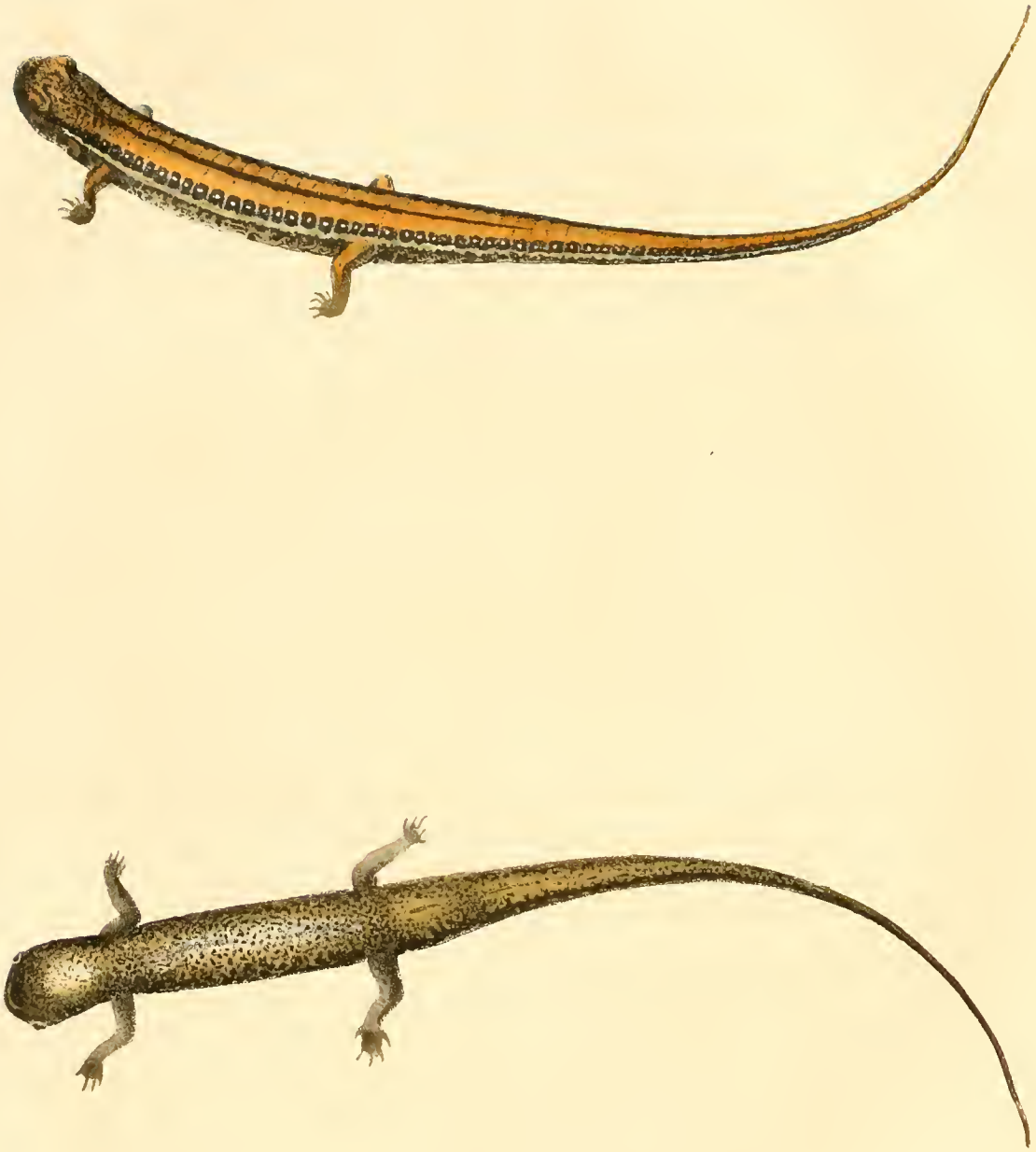
Dimensions. Length of head and neck to anterior extremities, 7 lines; breadth

of head, 2 lines; length of body to vent, 1 inch 5 lines; length of tail beyond vent, 1 inch 8 lines.

Habits. Although placed by some among the aquatic Salamanders, the very skin, roughened as it is, would seem to shew this animal is destined to live on land, and that it only approaches the water at certain seasons. I have always seen it on land, but in damp places, as under fallen trees or rocks, from whence it emerges after heavy rains, or in the dusk of evening, in search of insects, earth-worms, &c.

Geographical Distribution. The Salamandra symmetrica has a very wide range; I have received it from Florida and Alabama, and have seen it in Carolina, Virginia, and as far north as the Green Mountains of Vermont. Though abundant in the upper parts of Carolina, yet I have never seen them in the flat country around Charleston, or along the sea coast of the southern states.

General Remarks. Harlan was the first who made this animal known to naturalists. Previous to his description it seems to have been confounded with the stellio of Catesby, represented in the beak of the Ardea herodias. They were no doubt deceived by the spots on the sides of the body, which should have led them to a distinctive mark. The animal of Catesby differs from the one here described in many respects: it has the skin soft and smooth; the colour bluish-black; the dorsal spots white; much less regular in size and disposition, and extending on the tail.



Salamandra guttolineata

12.

Sera. sculp.

P.S. Duval Lith.r Philad.

SALAMANDRA GUTTO-LINEATA.

Plate XII.

Characters. Head short and thick; snout obtuse; body straw colour above, with a vertical line of black, bifurcating behind the occiput, a lateral black band, in which is a row of white spots, and beneath this a white line. Tail nearly twice as long as the head, neck, and body.

Description. The head is short and thick; the snout rather obtuse, and the nostrils anterior; the body is elongated and cylindrical; the tail is very long, thick and rounded at its root, but soon becomes small, compressed, and pointed at its extremity.

The anterior extremities are small, and terminate in four fingers; the posterior are larger and stronger, and end in five toes.

Colour. The head is yellow above, mottled with black; the upper jaw yellowish, the lower whitish; the eyes are full and prominent; the pupil black; the upper part of the iris flame-coloured, the lower black. The neck, body, and tail above are straw colour; behind each orbit begins an indistinct line of black, which unite half an inch back of the occiput, and form a large vertebral line, which is extended to one inch beyond the posterior extremities; from the snout runs a black band through the lower part of the iris, along the flank, to near the end of the tail; beneath this is a white line extending from the angle of the mouth along the flanks above the anterior and posterior extremities, to about midway of the tail. The whole inferior surface of the neck, abdomen and tail, below the lateral white

line, is dark gray. The superior surface of the anterior and posterior extremities is yellow; both the arms and the thighs have a black line on their posterior faces; the latter a white line, continuous with the white lateral one already described.

Dimensions. Length of head and neck, to anterior extremities, 9½ lines; length of body to vent, 1 inch 10 lines; length of tail, 4 inches 4 lines; total length, 6 inches 11½ lines.

Habits. It is doubtless a land animal, if we judge from the shape of the tail; and only seeks the water, as do others of the genus, at certain seasons of the year. They are most commonly found in damp, moist places, as under fallen trees, or near springs of water.

Geographical Distribution. This animal has only yet been observed in Carolina, where I have seen them in the middle country; and Dr. Wurdeman has furnished me with specimens from Greenville, near the mountains, where he says they are numerous.

General Remarks. The Salamandra gutto-lineata bears some resemblance to the Salamandra cirrigera of Green; and indeed one of the four specimens that have fallen under my observation had two small cirri to the upper jaw. These cirri, however, should not be looked upon as of any great consequence in determining the species, for some have them, others not; and the same I know to be true of the Salamandra cirrigera. They should rather be regarded as certain developments that take place during the generative season of the animal, and disappear when that is passed, like the development of certain tubercles on the extremities of frogs, or the fringed borders to the tails of some Salamanders. The Salamandra cirrigera differs furthermore from the Salamandra gutto-lineata, in having a black lateral line only; the white spots, the white lateral and black vertebral lines that characterize the latter, are wanting in the cirrigera.

Trigonocephalus piscivorus

1

Lehman & Duval Lith.ª Philadelphia

TRIGONOCEPHALUS.—*Oppel.*

Genus Trigonocephalus.—Characters. Head large, triangular, covered with plates in front, and on the vertex to behind the orbits, and with scales posteriorly; a deep pit between the eyes and nostrils; upper jaw armed with poisonous fangs; body thick; plates on the abdomen and base of the tail; a few scales at the apex.

TRIGONOCEPHALUS PISCIVORUS.*—*Lacépède.*

Plate XIII.

Characters. Head very large, triangular, covered with plates in front, and on the vertex, and with scales behind; a deep pit between the eye and nostril; upper jaw armed with poisonous fangs; body thick, dusky greenish-brown, tinged with yellow, and with transverse bands of black. Pl. 130, caud. pl. 29, sc. 4, pl. 2, sc. 8.

Synonymes. Water viper, *Cates.*, Carol., vol. ii. p. 43, pl. xliii.
Le piscivore, (crotalus piscivorus,) *Lacépède*, Hist. Nat. des Rept., tom. ii. p. 424.
Scytalus piscivorus, *Latr.*, Hist. Nat. des Rept., tom. iii. p. 163.
Scytale piscivorus, *Daud.*, Hist. Nat. des Rept., tom. v. p. 344.
Coluber aquaticus, *Shaw*, Gen. Zool., vol. iii. p. 425, pl. iii.
Natrix piscivorus, *Merrem*, Versuch. eines Syst. der Rept.
Trigonocephalus tisiphone, *Cuv.*, Reg. Ann., vol. ii. p. 89.
Water moccasin, *Vulgo.*

* The specific term "Piscivorus," has been chosen for this animal, as that of "aquatilis," or "aquaticus," is applied to another.

Description. The head is triangular and very large, covered with plates in front, and on the vertex, and with small scales posteriorly. The vertical plate is regularly pentagonal, with an acute angle behind; the superior orbital are irregularly quadrilateral, narrowest within, broadest without, and projecting far over the eye, so as to give it a threatening appearance; the occipital plates are regularly pentagonal, with acute angles forward; posterior to them is a transverse row of four smaller plates; the frontal are pentagonal, large, with their outer margins rounded; the anterior frontal smaller and triangular, with the bases rounded and pointed forward, and the apices backwards and inwards; the rostral plate is nearly quadrilateral, a little larger below. There are two nasal plates; the anterior is quadrilateral, a little excavated posteriorly; the posterior is irregularly quadrilateral, concave in front, to complete the nostril. There are two anterior orbital plates; the superior very large, the inferior smaller, making the posterior wall of the pit between the eye and nostril, which is completed in front and below by the second labial, and a small plate resting on the third labial plate. The posterior orbital plates are three in number, and nearly of the same size; the inferior makes part of the inferior wall of the orbit, which is completed by the third labial plate. The nostrils are large, lateral, and very near the snout; a very deep pit exists midway between them and the eye, but on a lower plane; the upper jaw is covered with seven labial plates; the eye is large, though it does not appear so at first from the projection of the superior orbital plate; the pupil is elliptical, dark and vertical; the upper half of the iris bright golden, the inferior half black; the neck is greatly contracted; the body elongated, very robust and thick, even to the tail, where it contracts suddenly; it is covered with carinated scales, even to those adjoining the plates; those above are most strongly carinated. The abdomen is covered with very broad plates; the tail is short, thick, convex, and terminates in a horny point, having carinated scales above, and plates and scales below.

Colour. The head is dark brown above, with a yellowish line from the snout over the nostril, tinging the outer margin of the superior orbital plate; below this is a black vitta, beginning at the pit in front of the eye and continuing backwards to beyond the angle of the mouth, involving the lower half of the pupil and iris.

The labial plates of the upper jaw are dirty white. The neck, body and tail of the animal is dark brown, lightened towards the sides to a dingy greenish-yellow. The abdomen is leadish-grey, approaching to black towards the tail.

Dimensions. Length of head, 1½ inches; breadth of head, 1 inch; length of body, 19 inches; length of tail, 3½ inches; circumference of neck, 2 inches; circumference of body, 5 inches. In the specimen described there were 130 abdominal plates, and 29 plates under the tail, the first bifid; these were succeeded by 4 bifid plates or scales; and there were again two entire plates, succeeded by 8 scales.

Habits. It is found about damp, swampy places, or in water—far from which it is never observed. In summer, numbers of these serpents are seen resting on the low branches of such trees as overhang the water, into which they plunge on the slightest alarm. Catesby thinks they select these places to watch for their prey. They merely choose them in order to bask in the sun; for in those situations deprived of trees, as the ditches of rice fields, their lurking places are often on dry banks. They are the terror of the negroes that labour about rice plantations, where it is more dreaded than the rattle-snake, which only bites when irritated or in self-defence, or to secure its prey; the water moccasin, on the contrary, attacks every thing that comes within its reach, erecting its head and opening its mouth for some seconds before it strikes.

I have placed in a cage with the water moccasin, several of the harmless snakes, as the Coluber guttatus, Coluber getulus, &c., at a time; they all evinced the greatest distress, hanging to the sides of the cage and endeavouring by every means to escape from their enemy, who attacked them all in turn. Two animals of its own species were then thrown into the cage; it seemed instantly aware of the character of its new visiters, and became perfectly quiet. Indeed I have often received four or five of these animals in safety, after their having peaceably travelled together a journey of fifty miles in the same box. The dread of the fatal water moccasin has brought into suspicion several other snakes that live

like it in the water, as the Coluber fasciatus, Coluber erythrogaster, &c., which are not only harmless, but really useful in destroying vermin.

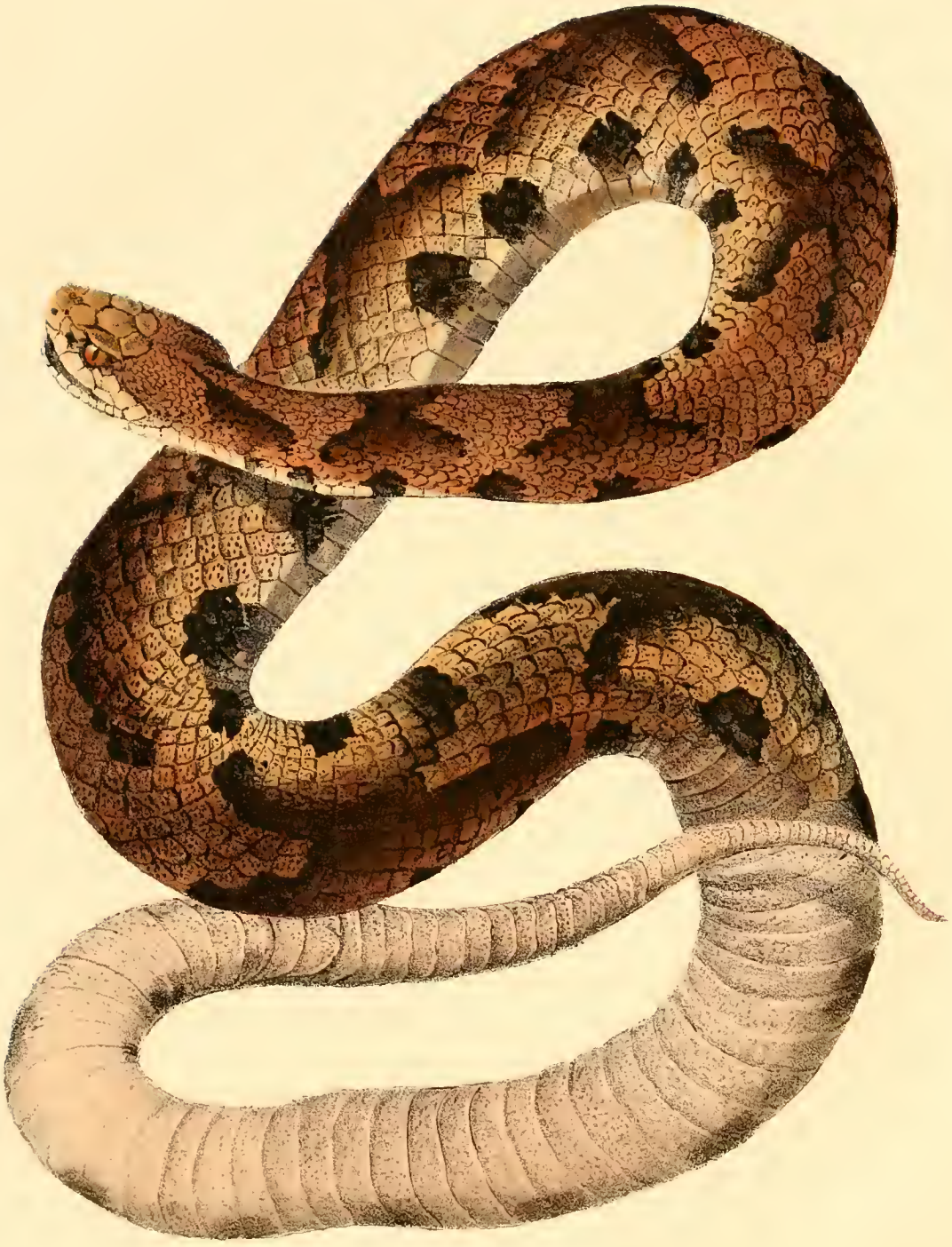
The food of the water moccasin is such fish as it can overtake, and few exceed its velocity in swimming; and whatever smaller reptiles, as frogs, toads, tadpoles, &c., fall in its way become its prey.

Geographical Distribution. The northern limit of the Trigonocephalus piscivorus must, for the present, be set down as the Pedee river in North Carolina; as to its southern and western, nothing positive can be said, only that its range is extensive; I have had it from the Floridas, Alabama, and from the banks of the Mississippi, and have no doubt that it may be found for a certain distance up the tributaries of this great river.

General Remarks. This animal was certainly first made known to naturalists by Catesby, who calls it the water viper, and adds, that it is commonly called in Carolina, "the water-rattle; not that it hath a rattle, but because many are as large, and coloured not unlike the rattlesnake, and their bite is considered as fatal." Lacépède placed it among the crotali, but improperly, as it is without rattles, which are the distinctive characters of that genus; their place is supplied in this by a small horny point, about half an inch in length. This excrescence, though perfectly harmless, has, as Catesby says, "been considered of dreadful efficacy by the credulous vulgar, not only to kill men and other animals, but even to destroy plants and trees."

This is doubtless the Trigonocephalus tisiphone of Cuvier, as he first refers to Plate xliii. of Catesby, which is certainly the Trigonocephalus piscivorus, or water viper. Why he should also have referred to Plate xliv. is inconceivable, as that is the black viper, an animal entirely distinct; and the same may be said of the name tisiphone, for which he refers to Shaw, whose Coluber tisiphone is neither the xliii. nor the xliv., but the xlv. plate of Catesby, which is the brown viper, and perhaps only a dark Coluber fasciatus before it has shed its skin.

As to the toxicophis leucostoma of my friend Professor Troost, of Nashville, I was at first disposed to regard it as a variety of the Trigonocephalus piscivorus, from the general correspondence in the number of plates and scales, as well as from the habits of his animal; but a drawing he sent me of his animal is enough to satisfy me that they are distinct.



Trigonocephalus Contortrix

14.

TRIGONOCEPHALUS CONTORTRIX.

Plate XIV.

Characters. Head very large, triangular, covered with plates in front, and on the vertex, with scales behind; a pit between the eye and nostril; upper jaw with poisonous fangs; body thick, light hazel-nut brown, with transverse bars of dark brown, narrowest on the mesial line, broader and bifurcating on the flanks; tip of the tail corneous. Pl. 150, caud. pl. 42, sc. 4.

Synonymes. Boa contortrix, *Lin.*, Syst. Nat., vol. i. p. 373.
Angkistrodon mokeson, *Beauv.*, Tran. Amer. Phil. Soc., vol. iv. p. 381.
Cenchris mokeson, *Daud.*, Hist. Nat. des Rept., tom. v. p. 358, pl. lx. fig. 3.
Scytalus cupreus, *Rafin.*, Am. Jour. Art. and Sci., vol. i. p. 85.
Scytalus cupreus, *Harl.*, Med. and Phys. Res., p. 130.
Cenchris mokeson, *Harl.*, Med. and Phys. Res., p. 128.
Copperhead, *Vulgo.*

Description. The head is very large, triangular, and broadest posteriorly; the mouth large, with the upper jaw strong, and furnished with poisonous fangs; the vertical plate is regularly pentagonal, with an acute angle directed backwards; the superior orbital plates are irregularly triangular, with their apices turned inwards, and their bases outwards, projecting over the eye; the occipital are rhomboidal; the frontal plates are large and quadrilateral; the anterior frontal are of the same form, but smaller; the rostral is large, triangular, with its basis downwards, and its apex upwards and truncate. There are two nasal plates, the anterior quadrilateral with its posterior margin hollowed, the posterior trapezoid with its anterior border lunated to complete the nostril. There are three posterior

orbital plates nearly of the same size, the upper one triangular; the inferior orbital plate is single, long, narrow and semicircular; there are two anterior orbitals, the upper quadrilateral, the lower makes the superior wall of the pit between the eye and the nostril, which is completed below by the second labial plate, and by a small plate that rests on the third labial. The margin of the upper jaw is covered with seven quadrilateral plates. The nostrils are large, lateral, and placed near the snout; the eyes are large, but do not at first appear so from the projection of the superior orbital plates; the pupil is elliptical, vertical and dark; the iris bright golden, with a tinge of red. The neck is greatly contracted; the body is elongated, but thick to near the tail, and is covered above with rhomboidal scales, carinated, except those of the lower rows, which are smooth and larger. The abdomen is covered with plates, the last one of which is very large; the tail is short, thick, conical, and ends in a horny tip.

Colour. The head is a delicate light hazel-nut brown above, with the labial plates whitish; the ground of the colour of the whole animal, neck, body and tail, is of the same delicate hue, lighter on the sides, where the scales are beautifully freckled with small dark spots. Behind the occiput begins a series of transverse bars of dark brown, continued to near the extremity of the tail; these bars are contracted along the vertebral line, but are broader and bifurcated on the flanks. These bars are lightest on the back, darker at the sides, with their anterior and posterior margins bordered with brown. The under surface of the whole animal is flesh-coloured, freckled with minute points of dark brown, and a series of sub-round dark coloured spots on the abdominal plates near their extremities; these ascend to include a scale or two on the flanks, and are so disposed that one spot corresponds to the point of bifurcation of the transverse dorsal bars, and another to the space between them; all these spots terminate at the tail, which is flesh-colour below.

Dimensions. Length of head, 1 inch 2 lines; breadth of head, 11 lines; length of body, 21 inches; length of tail, 3½ inches; greatest circumference of body, 3½ inches; circumference of the neck, 1 inch 10 lines. In the individual described,

there were 150 abdominal plates, 42 subcaudal, and four pairs of bifid plates or scales near the apex.

Habits. The Trigonocephalus chooses dark and shady places for its residence in general, though at times it is found in meadows of high grass. Its usual food seems to be small birds and field mice, which I have more than once found in its stomach. In confinement they could never be made to take any food; though different small animals were offered, they would kill, but never eat them.

Geographical Distribution. The Trigonocephalus contortrix, has an extended geographical range. I have received them from the western parts of New England to middle Florida, inclusive, and from the shores of the Atlantic to the borders of the Alleghany mountains. As yet, I have no evidence of its existence in the valley of the Mississippi; its place is there probably supplied by the Toxicophis atro-fuscus of Troost, to which its habits are very similar.

General Remarks. This animal was first described by Linnæus in the twelfth edition of his Systema Naturæ, under the name Boa contortrix, and it ranges well under his genus Boa, which included all those serpents, venomous or not, that had plates under the tail, as well as on the abdomen. The specimen from which he took his description, was sent him by Dr. Garden, and had, according to his account, the same number of plates as the animal here described, though he does not mention the two or three scales or bifid plates on the tail. He says furthermore that he found the gland or sac for containing the venom, but that there were no fangs, which might have been the result of accident, as the larger fall out and are succeeded by others. It cannot be imagined why he should have given a reference to the hog nose of Catesby,* especially as this is far removed from his genus Boa, in having scales or bifid plates under the tail. This reference to the Coluber constrictor of the tenth edition of the Systema Naturæ, which is a very different animal from that of the twelfth edition, is still more remarkable, as it

* Cates., Carol., &c., vol. ii. pl. lvi.

corresponds with it neither in its character nor habits; of that he says, "maxillæ apex simus, triqueter adoriter homines, circum pedes convolvens, sed innocuus," while this he is desirous to prove a poisonous animal "caput latum, valde convexum, sacculos venenatos habet, sed tela non reperi."

Daudin, from some researches of Palisot de Beauvais, and from his own observations, makes this animal a new genus, cenchris, saying at the same time that the hog nose of Catesby was synonymous with it, and that the common hog nose is the Boa contortrix, in which he was mistaken. There are doubtless several species of hog nose snakes in the country both at the north and south, but all are widely different from the Boa contortrix (Trigonocephalus contortrix). Daudin's description of the cenchris mokeson is good, and agrees well with the Trigonocephalus contortrix; "body thick; tail short and cylindrical; head large, covered with plates in front and scales behind; jaws with fangs." "The colour of the cenchris mokeson," he says, "appears from a drawing done from nature, by Peale, the proprietor and director of the Philadelphia Museum, of a reddish-brown; the body and tail marked with fifteen large transverse dark bands; these are narrowest in the centre," (viz: along the vertebral line,) "and are broader and darker at the sides."

Cuvier is as wrong in referring the cenchris mokeson of Daudin to the genus heterodon,* as in saying that Daudin himself knew it only from the figure of the hog nose of Catesby, when in fact he had a very fair drawing furnished him by Peale, easily recognised by those acquainted with the animal; and besides this he has given two good figures on the same plate,† one the head of the hog nose, and the other the head of his mokeson, shewing clearly that they belong to very different genera.

* Regn. Anim., tom. ii. p. 62, note 2.

† Hist. Nat. des Rept., tom. v. pl. xl., fig. 25; mokeson, fig. 28, hog nose.

Crotalus miliarus.

15.

CROTALUS.—*Linnæus.*

Genus Crotalus.—Characters. Head large, triangular, rounded in front, covered with plates anteriorly; vertex and occiput with scales; a deep pit between the eye and nostril; upper jaw armed with poisonous fangs; body elongated, thick; tail short and thick, terminating in a rattle, which is a corneous production of the epidermis; plates on abdomen, and under the tail.

CROTALUS MILIARIUS.*—*Linnæus.*

Plate XV.

Characters. Head large, triangular, rounded in front; covered anteriorly and on the vertex with plates, posteriorly with scales; a pit between the eye and nostril; upper jaw with poisonous fangs; body above dark gray, with a vertebral row of subquadrate black spots, margined with yellow, and a double series of black spots on each side, the upper larger, but less distinct. Pl. 128; caud. pl. 30.

Synonymes. Small rattlesnake, *Catesb.*, Carol., vol. ii. p. 42, pl. xlii.
Crotalus miliarius, *Lin.*, Syst. Nat., vol. i. p. 372.
Le millet, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 242.
Crotalus miliarius, *Gmel.*, Syst. Nat. Lin., vol. i. part iii. p. 1080.
Crotalus miliarius, *Latr.*, Hist. Nat. des Rept., tom. iii. p. 203.
Crotalus miliarius, *Daud.*, Hist. Nat. des Rept., tom. v. p. 328.
Crotalus miliarius, *Harl.*, Med. and Phys. Res., p. 134.
Causidona miliarius, *Wag.*, Nat. Syst. der Amph., p. 176.
Ground rattlesnake, *Vulgo.*

* Catesby first described this animal, and seemed to consider it as a young snake, yet his name, Vipera caudisona, &c., cannot be retained either for this or the larger species, as I find it previously applied to a South American animal; and further, it is now a generic name of several excellent herpetologists.

Description. The head is very large, triangular, broad behind, and truncate at the snout; covered with plates in front, and on the vertex to behind the eyes. The vertical plate is pentagonal, broadest in front, pointed behind; the superior orbital is oval, most extensive in the antero-posterior direction, with its outer margin projecting greatly over the eye. The occipital plates are rhomboidal; behind these the head is covered with small scales. The frontal plates are pentagonal, broadest externally; the anterior frontal are triagonal, with their bases outwards and forwards; the nasal plates are quadrilateral and nearly of the same size, the one hollowed on its posterior, the other on its anterior border, to form the nostril. There are two posterior orbital plates quadrilateral; and two inferior, of which the posterior is very long and narrow. The anterior orbitals are two in number, the inferior of which makes the upper wall of a deep pit that exists midway between the nostrils and eyes, but on a lower plane; the inferior margin is completed by two other plates. The upper jaw is covered with twelve labial plates; the nostrils are large and very near the snout, but lateral; the eyes are large, the pupil black, oval, and vertical; the upper half of the iris of the brightest yellow, lower half black. The mouth is large; the jaws strong; the upper furnished with poisonous fangs. The neck is greatly contracted, and covered with small carinated scales; the body is elongated, but thick in proportion, even to the tail, where it becomes suddenly contracted, and is covered with carinated scales above, the lowest row ecarinate. The tail is short, conical, and sustains an uncertain number of rattles.

Colour. The ground of the colour of the whole upper surface of the animal is pepper-and-salt grey. The head is more dusky in front, with a light coloured band running transversely from orbit to orbit; from this transverse band begins a yellowish-red, or sometimes a purplish vertebral band, that runs to near the extremity of the tail; this band increases in size to the neck, and has on either side of it, at the occiput, an oblong dark blotch; from the superior orbital plate to the posterior part of the head is a dash of yellowish-white; beneath this, and descending from behind the orbit, is a black vitta, under which is again a yellowish-white line from the inferior margin of the orbit to behind the angle of the mouth,

where it is continuous with a line of similar colour that departs from the lower jaw about its middle. The upper jaw is dusky; the lower is light coloured, with some dark lines that mark the position of the labial plates; the vertebral line is interrupted at regular intervals by oblong, oval, or subquadrate spots, placed transversely; these spots are frequently emarginate before and behind, and all of them have their margins tipped with yellowish-white. On the flanks is another series of sub-round spots, placed in the same vertical line with the vertebral row, becoming less regular towards the tail. Between the lateral and vertebral rows, and alternating with them, is another series of round spots; these are dusky, never as strongly marked as the others, and sometimes nearly obsolete. These colours are by no means so bright at all times as they are represented in the accompanying plate, which was drawn from an animal of great beauty, soon after it had shed its skin. Indeed, there are times when the whole colouring is very obscure, and requires washing to bring it out. The inferior surface of the tail is flesh colour, dotted with dark spots.

Dimensions. Length of head, 11 lines; greatest breadth of head, 7½ lines; length of body, 13 inches; length of tail, 2 inches without the rattles; these vary in number, generally there are two or three, but I have seen as many as five. In the specimen here described, there were 128 abdominal plates, and 30 subcaudal.

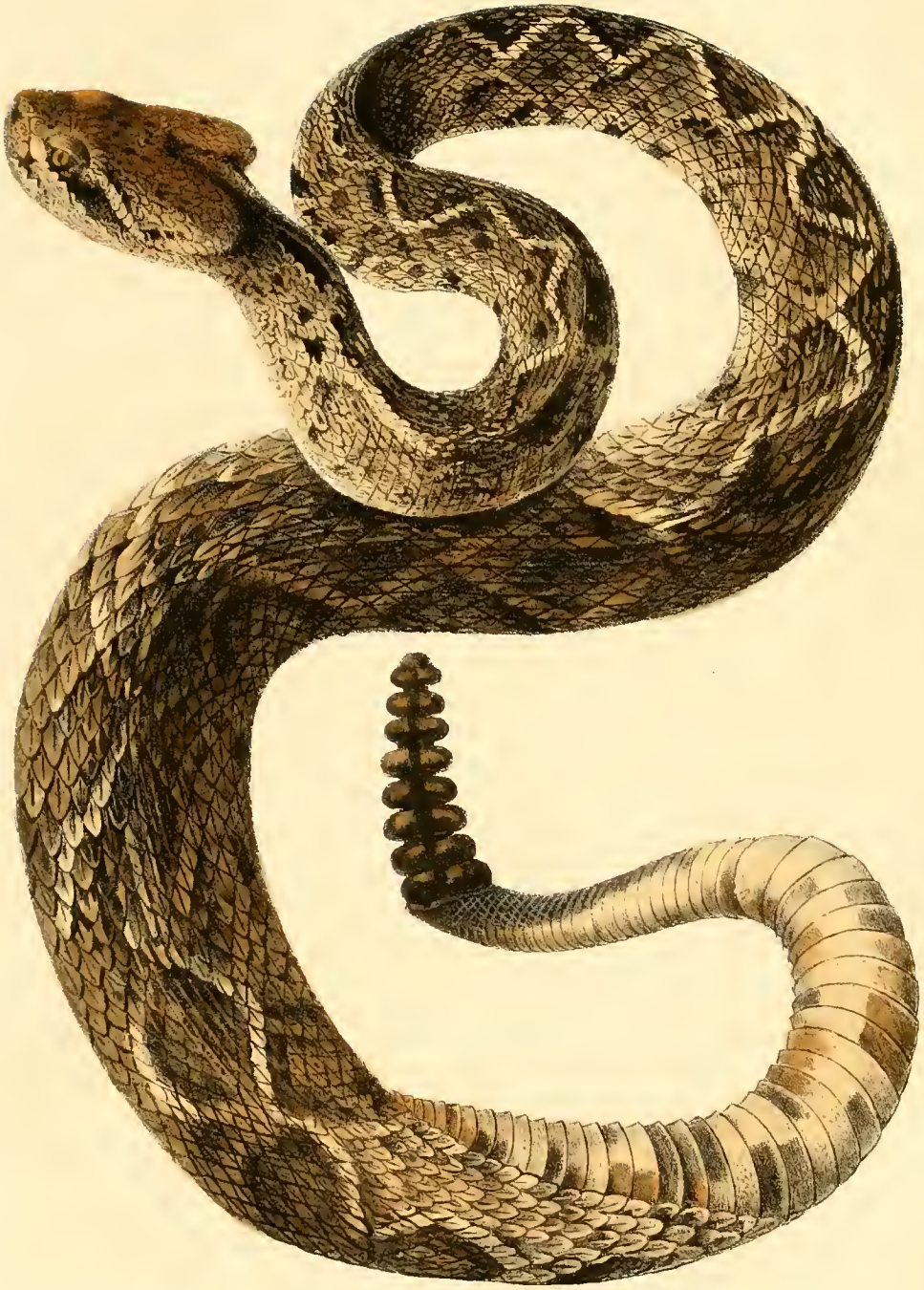
Habits. This species of rattlesnake is very common in the southern states; it is found in dry places among leaves, and frequently in high grass, in search of small field mice, on which it feeds.

Geographical Distribution. This animal has a wide range, though its distribution is somewhat singular; in the Atlantic States it is not found north of lat. 35°, yet it inhabits Michigan in lat. 43°; it abounds in Carolina, whence it passes through Georgia, round the southern extremities of the Alleghanies to Alabama, Mississippi and Louisiana. I have received specimens from all these states, and have no doubt but that it is found in the western states and territories as far as the foot of the Rocky Mountains, as Say found it even on the river Platte.

General Remarks. This animal was first made known to naturalists by Catesby, whose figure of it is but tolera'ble. Linnæus received a specimen from Dr. Garden, and gave it a place in his twelfth and last edition of the Systema Naturæ, under the name Crotalus miliarius, which it bears to this day.

The Crotalus miliarius is greatly dreaded, as it gives but a very slight warning with its rattle; and unlike the Crotalus durissus, will frequently be the aggressor. By the common people its bite is thought to be more destructive, and its venom more active than that of the larger species: various experiments have, however, satisfied me of the fallacy of this opinion. It is probable that each Crotalus has the requisite quantity of venom to destroy the animals on which it preys, for it is certain that the miliarius can easily kill a small bird, such as the towhee bunting, a pigeon, or a field mouse; but a cat that was bitten several times, at different intervals, appeared to suffer much, and to droop for thirty-six hours, at the end of which time the effects of the poison entirely disappeared; the same animal was long afterwards destroyed by a single blow of the Crotalus durissus.

Catesby's observation of this animal is very correct: "the bite of this snake is poisonous, but it being small is not always mortal." This species makes a good transition from the genus Crotalus to that of the Trigonocephalus, having the plates on the head of the one and the rattles at the tail of the other. It is this arrangement of plates on the head that led Fitzinger to establish his genus Caudisonia, and Gray his Crotalophorus. This animal seems to be closely allied by the disposition of its colours to the Crotalus tergiminus of Say, which he describes as frequenting the villages of the prairie dogs of Missouri; yet I am not at this time disposed to consider them as identical.



Crotalus adamanteus.

CROTALUS ADAMANTEUS.—*Beauvais.*

Plate XVI.

Characters. Head very large, triangular, rounded in front, flattened above, covered with plates in front and with scales behind, and on the vertex; a deep pit between the eye and nostril; upper jaw furnished with fangs; body above dark brown or dusky, marked with a series of large regularly rhomboidal spots, continuous and extending from the head to the extremity of the tail; abdomen dirty yellowish-white.

Synonymes. Crotalus adamanteus, *Beauv.*, Trans. Amer. Phil. Soc. vol. iv. p. 368.
Crotalus rhombifer, *Daud.*, Hist. Nat. des Rept., tom. v. p. 323, pl. lx. fig. 22.
Crotalus durissus, *Shaw*, Gen. Zool., vol. iii. p. 233, fig. 89, not the description.
Crotalus horridus, *Harl.*, Med. and Phys. Res., p. 133.

Description. The head is enormously large, triangular, but rounded in front; covered with plates anteriorly, and with scales posteriorly and on the vertex. The rostral plate is small, triangular, larger below, narrowed above; the frontal plates are small and quadrilateral. There are two nasal plates; the anterior large, quadrilateral, and concave on its posterior margin; the posterior irregularly triangular, lunated in front to complete the nostril. The superior orbital plates are oval and large, the greatest extent being in the antero-posterior direction, with their outer margins greatly projecting. There are two anterior orbital plates; the upper larger and quadrilateral, the lower smaller. The inferior and posterior walls of the orbit are made up with small plates. The nostrils are large, lateral, and near the snout; the pit between the orbits remarkably large. The eyes are large,

the pupil elliptical, vertical and dark; the iris light gray, with a tinge of yellow. The mouth is large, the upper jaw furnished with poisonous fangs, and covered externally with twelve labial plates, all of which are quadrilateral, the largest in front. The neck is remarkably small and contracted; the body elongated, very thick, even to the tail; above it is covered with scales, approaching an hexagonal form, strongly carinated on the mesial line, less so near the abdomen, which is covered with very large plates. The tail is short and thick, with scales and plates below, and sustains a greater or less number of rattles.

Colour. The head is very dark brown above, with a light coloured line descending from near the snout to the angle of the mouth; above this is a broad black vitta, reaching from the orbit of the eye nearly to the neck; and above this again is a white line of the same extent and direction. The neck and body are a dusky-brown, sometimes tinged with a dusky-green—indeed the whole colour of this animal is singularly dingy—the body is marked with a series of regular rhombs of the darkest-brown, lighter towards the middle; each rhomb is bordered with a margin of dirty-white; these gradually disappear towards the tail, and their place is supplied by dusky bars, which at the end also disappear; the tail is dusky near the rattles.

Dimensions. Length of head, $2\frac{3}{4}$ inches; greatest breadth of head, $2\frac{1}{2}$ inches; circumference of the neck, 4 inches; length of body, 60 inches; length of tail, $2\frac{1}{2}$ inches; length of rattles, 3 inches. In the individual here described, there were 172 abdominal plates, and 25 plates under the tail.

Habits. The Crotalus adamanteus chooses damp and shady places, keeping constantly near the water, from which circumstance it is commonly called "the water-rattle," though there is no evidence of their taking to the water in search of prey.

Geographical Distribution. Its range seems very limited. Hitherto it has never been found north of Carolina, where it is common on the sea board; it

abounds too in East Florida, but westward beyond that I have no evidence of its existence.

General Remarks. The Crotalus adamanteus is the largest of our rattlesnakes, reaching even to the length of eight feet. The individual from which the accompanying plate was taken, had reached the length of nearly six feet, and I have seen others over seven feet long; a more disgusting and terrific animal cannot be imagined than this; its dusky colour, bloated body, and sinister eyes of sparkling grey and yellow, with the projecting orbital plates, combine to form an expression of sullen ferocity unsurpassed in the brute creation.

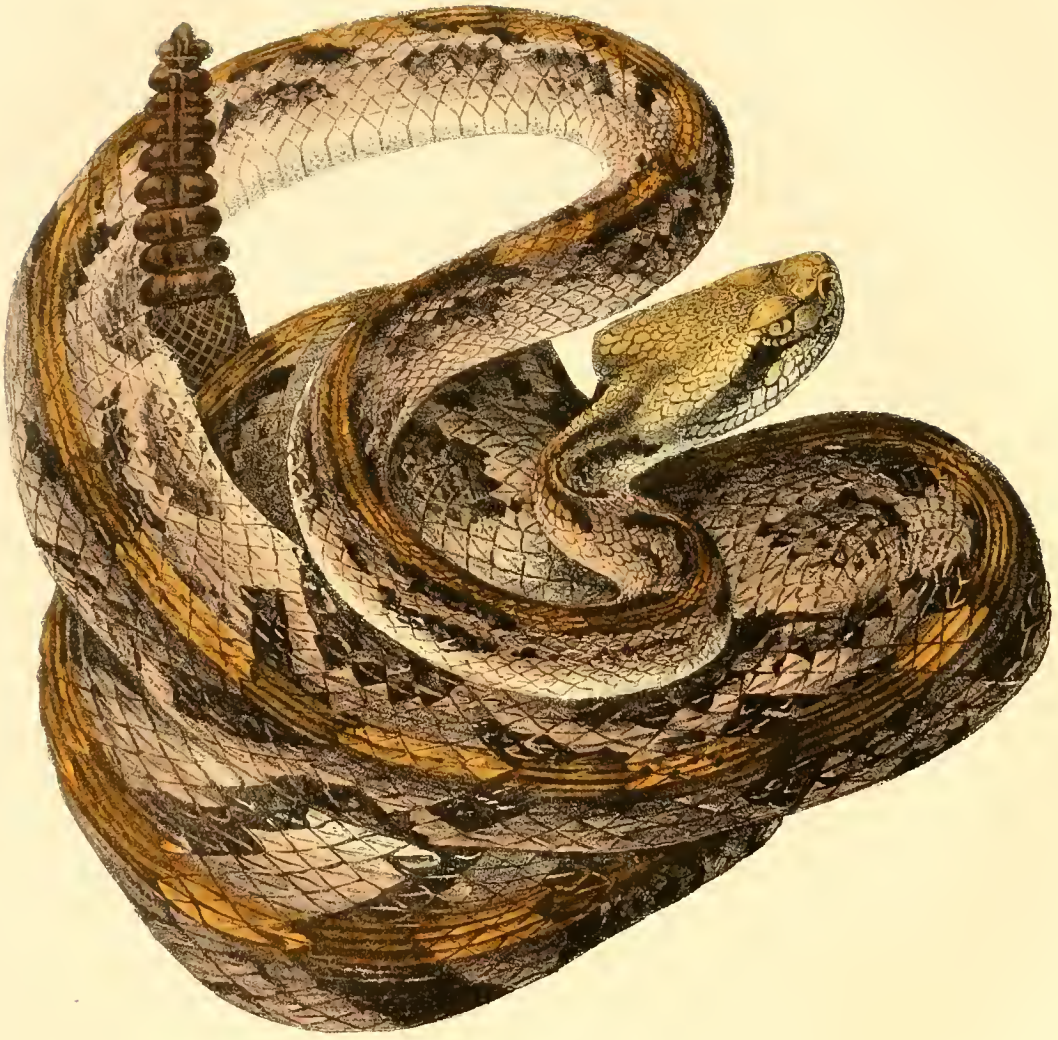
Palisot de Beauvais was the first to separate this from the Crotalus durissus, and to give it the name that has here been retained.

Latreille next speaks of this animal, from a skin procured in Carolina and given him by Bosc. At first he seems to consider it a new species under the name of Crotalus rhombifer, but he ends by saying it is identical with the Crotalus horridus.

To Daudin belongs the merit of having first fully and accurately described the animal now under consideration. Beauvais's description, though separating this species from the banded rattlesnake, must amount to no more than "indications for the establishment of a new species." Daudin's account of the animal is very accurate, and was taken from the skin of one four feet six inches in length, found by Bosc in the United States.

It is not a little remarkable, that after so correct a description and such judicious remarks as those of Daudin, this animal should still have been overlooked, not only by European, but by American naturalists. This can only be accounted for by supposing it confounded with the Crotalus horridus, to which its colour, on a superficial examination, appears somewhat similar; but, observed attentively, there will be found enough even in this to distinguish the two animals.

The Crotalus horridus has a black band across the forehead, another from the eye to the angle of the mouth; two large bands begin behind the occiput and run along the neck and back to the distance of about one-fifth of the whole animal; these latter bands are the breadth of two scales and a half; two other narrower bands, and of the same length and colour, depart from the temples; while the Crotalus adamanteus is dusky-brown, without any black marks on the head, and has the rhomboidal spots beginning at the back of the occiput, and continuing along the whole extent of the animal to near the extremity of the tail, which is banded. It is highly probable that the figure of the Crotalus durissus of Shaw represents our animal, but the description refers certainly to the Crotalus durissus, and it is mostly taken from Catesby.



Crotalus durissus.

CROTALUS DURISSUS.—*Kalm.*

Plate XVII.

Characters. Head large, flattened above, triangular; rounded anteriorly, covered with plates only in front, and with minute scales on the vertex and occiput. There is a deep pit between the nostril and eye; upper jaw armed with poisonous fangs; body elongated and robust; tail short, thick, and furnished with rattles.

Synonymes. Crotalus durissus, *Kalm*, Act. Stockh., ann. 1752, p. 310.
Rattlesnake, *Catesb.*, Carol., &c., vol. ii. pl. xli.
Crotalus durissus, *Lin.*, Syst. Nat. Lin., vol. i. p. 352.
Crotalus durissus, *Gmel.*, Syst. Nat. Lin., vol. i. part iii. p. 181.
Le durissus, *Lacép.*, Hist. des Serp., tom. ii. p. 423.
Crotalus durissus, *Latr.*, Hist. Nat. des Rept., tom. v. p. 304.
Crotalus atricaudatus, *Latr.*, Hist. Nat. des Rept., tom. iii. p. 209.
Le Crotale à queue noire, *Bosc*, Nouv. Dict. d'Hist. Nat., tom. vi. p. 555.
Crotalus durissus, *Daud.*, Hist. Nat. des Rept., tom. v. p. 304, pl. lxvii.
Crotalus atricaudatus, *Daud.*, Hist. Nat. des Rept., tom. v. p. 307.
Crotalus horridus, *Shaw*, Gen. Zool., vol. iii. p. 317, pl. lxxxviii.
Crotalus durissus, *Harl.*, Med. and Phys. Res., p. 132.

Description. The head is enormously large, triangular, but broad and truncate anteriorly, covered with plates only in front, and with minute scales on the vertex and occiput; the rostral plate is large and triangular, with its basis downwards and its apex upwards and truncate; the frontal plates are also triangular, with their bases directed backwards. There are two nasal plates; the anterior is

quadrilateral and excavated behind, the posterior is lunated in front to complete the nostril. The superior orbital plates are regularly oval, the greatest extent of the oval being in the antero-posterior direction; their outer margin forms a strongly marked projection over the eye. There are thirteen labial plates to the upper jaw; those in front larger and quadrilateral, the posterior smaller and rhomboidal; above the labial plates is a row of small scales or plates, continuous with the inferior orbital. The anterior orbital is quadrilateral and very long; the posterior is of the same form, but only half the size. There are four small inferior orbital plates, which complete the lower walls of the orbit. Above the labial range is a row of small scales that form the lower walls of a deep pit, completed above by a large lunated plate; this pit is situated midway between the nostril and the eye, but on a lower plane. The nostrils are large, and very near the snout, but open laterally. The eyes are large, and extremely brilliant when the animal is enraged; the pupil is dark, oval and vertical; the iris flame colour. The mouth is large, the jaws strong, the upper furnished with poisonous fangs. The neck is very much contracted, and covered with carinated scales, larger than those on the head. The body is elongated, but thick, and covered with rough carinated rhomboidal scales above, and broad plates below. The tail is short, slightly conical, and sustains a greater or less number of rattles.

Colour. The superior surface of the head is ash colour, with a brownish band passing from the eye to the commissure of the mouth. The neck and body are pale ash colour, with a vertebral line of yellow, including three scales; behind the occiput on each side of this line is an oblong dark spot. The body is marked with a triple series of dark irregular blotches and bars along the back. In front the blotches of the vertebral series are oblong transversely, widely emarginate before and behind; they vary, however, in shape, near the middle of the body; they resemble chevrons, with an acute angle towards the head; beneath the terminations of these spots on the flanks is a row of subquadrate dark spots; near the tail the vertebral and lateral series unite to form a band, and between these there is another row of obsolete gray spots. The abdomen is dirty reddish-straw colour, freckled with minute black dots.

Dimensions. Length of head, $1\frac{3}{4}$ inches; greatest breadth of head, $1\frac{1}{4}$ inches; length of body, 40 inches; length of tail, $3\frac{1}{4}$ inches; length of nine rattles, 2 inches; total length, $47\frac{1}{4}$ inches; greatest circumference of body, 6 inches. The specimen described had one hundred and seventy-seven large broad plates on the abdomen, and twenty-five under the tail.

Habits. The Crotalus durissus lives on rabbits, squirrels, rats, &c., and in general is a remarkably slow and sluggish animal, lying quietly in wait for his prey, and never wantonly attacking nor destroying animals, except as food, unless disturbed by them. A single touch, however, will effect this; even rustling the leaves in his neighbourhood is sufficient to irritate him. On these occasions he immediately coils himself, shakes his rattles violently in sign of rage, and strikes at whatever is placed within his reach. In his native woods one may pass within a few feet of him unmolested; though aware of the passenger's presence, he either lies quiet or glides away to a more retired spot—unlike some of the innocent snakes that I have known attack passers-by at certain seasons of the year. He never follows the object of his rage, whether an animal that has unwarily approached so near as to touch him, or only a stick thrust at him to provoke his anger, but strikes on the spot, and prepares to repeat the blow, or he may slowly retreat, like an unconquered enemy, sure of his strength, but not choosing further combat. It is remarkable that he never strikes unless coiled; so that if once thrown from this position, he may be approached with less danger.

As to the fascinating or charming power of the rattlesnake, I have every reason to believe it a fable; and the wonderful effects related by creditable witnesses are attributable rather to terror than to any mysterious influence not possessed by all venomous or ferocious animals upon their weak, timid, and defenceless prey. The rattlesnake's charm lies in the horror of his appearance, and the instinctive sense of danger that seizes a feeble animal fallen suddenly into the presence of an enemy of such a threatening aspect.

In Catesby's time, when the country was less settled, rattlesnakes were common

enough; and he relates stories of their entering dwelling houses, and of one having even shared his bed, undiscovered; but his accounts are so strange at the present day, that we must suppose him deceived by the servants of the house where they are said to have occurred in February, a season at which the rattlesnake is never abroad. At present it is rarely met with, keeping far from all settlements, where its greatest enemy, the hog, is to be found. Even sportsmen are seldom under any apprehension on their account; yet I have more than once known dogs killed by them when the hunters have penetrated into woods at a distance from settlements.

Much has been said lately about the rattlesnake's power of climbing trees. To me his organization* seems very ill adapted to this; the tail in those snakes that climb with great facility is long and slender, and may at times be used as a prehensile instrument; while that of the rattlesnake is short and thick; the rattles, too, which are easily broken, would form an awkward appendage in climbing.

Geographical Distribution. The Crotalus durissus has the widest range of all our rattlesnakes, being found in nearly all parts of the United States. Kalm saw it in lat. 45° near Lake Champlain, and I have seen specimens from the borders of the Gulf of Mexico, and as far west as the Red river; and Dr. Pickering informs me that Say met with it in lat. 40° on the Mississippi.

General Remarks. There can be no doubt that this animal was first made known to naturalists by Catesby, whose plate of it is too good to be mistaken. Kalm, the celebrated Swedish traveller, next observed it in the northern states of the Union, and gave an accurate scientific description of it, from which Linnæus extracted the characters that distinguish the Crotalus durissus of the tenth edition of his Systema Naturæ.

* A full account of the curious organization of the rattlesnake, of its poison, and of its effect on animals, will be given in the anatomical part of this work.

Shaw seems to have confounded this animal with the Crotalus horridus, although the greater part of his description is copied from Catesby, which could only refer to the Crotalus durissus, or banded rattlesnake, under which latter name indeed Shaw speaks of it. It is next found mentioned as the Crotalus atricaudatus by Bosc, who supposes it to be a new species, in which he is followed by Latreille and Daudin; but there can be no doubt at present, that they are one and the same animal, as in the young the tail is generally black, and even in the adult I have seldom seen it otherwise.

It is commonly supposed that the number of rattles mark the age of the animal, a new one being added annually to those already existing. It is now certain that rattlesnakes have been known to gain more than one rattle in a year, and to lose in proportion, the exact number being regulated no doubt by the state of the animal as to health, nourishment, liberty, &c. I have known two rattles added in one year, and Dr. Bachman has observed four produced in the same length of time.

Mr. Peale of the Philadelphia Museum, kept a living female rattlesnake for fourteen years. It had when it came into his possession eleven rattles, several were lost annually and new ones took their place; at its death, after fourteen years confinement, there were still but eleven joints, although it had increased four inches in length. It is thus evident that the growth of their appendages is irregular, and that the age of the animal cannot be determined from their number. The number of rattles vary much; the largest I ever saw was twenty-one, all of which were perfect.

Elaps Fulvius .

ELAPS.—*Schneider*,* *Cuvier.*

Genus Elaps.—Characters. Head nearly of a uniform size with the body; jaws not dilatable on account of the shortness of the tympanal bones; upper jaw furnished with a fang fixed and permanently erect, wanting the pit so conspicuous in the crotali between the eye and nostril.

ELAPS FULVIUS.—*Linnæus.*

Plate XVIII.

Characters. Head short, size of body, rounded in front; upper jaw furnished with a permanently erect poisonous fang; body red, surrounded with black rings margined with yellow. Pl. 212, s. 32.

Synonymes. Coluber fulvius, *Lin.*, Syst. Nat., tom. i. p. 381.
Coluber fulvius, *Gmel.*, Lin. Syst. Nat., vol. i. part iii. p. 1190.
La noire et jaune, *Lacép.*, Hist. des Serp., tom. ii. p. 299.
Coluber fulvius, *Latr.*, Hist. des Rept., tom. iv. p. 140.
Coluber fulvius, *Daud.*, Hist. Nat. des Rept., tom. iii. p. 500.
Coluber fulvius, *Shaw*, Gen. Zool., vol. iii. p. 469.
Coluber fulvius, *Say*, Am. Jour. Arts and Sci., vol. i. p. 262.
Harlequin snake, *Audub.*, Birds, vol. i. pl. xliv.
Vipera fulvia, *Harl.*, Med. and Phys. Res., p. 127.
Elaps fulvius, *Fitz.*, Neue Class. der Rept., p. 51.

* Schneider's name is badly chosen, Ελαψ or Ελοψ is the Greek name for a non-venomous serpent, while this animal has poisonous fangs.

Description. The head is short, thick, and stout, not very distinct from the body, and rounded in front. The vertical plate is pentagonal, broadest in front, and pointed behind; the superior orbital are regularly quadrilateral, and do not project externally over the eye; the occipital plates are large and irregularly oblong; the frontal are pentagonal, broadest internally, narrow and pointed outwards and downwards; the anterior frontal are irregularly quadrilateral, broadest internally; the rostral plate is triagonal, broadest below, narrowed and rounded above. There are two nasal plates, the anterior quadrilateral, the posterior triangular, the former concave behind, the latter concave before, to complete the nostrils; there is one very large and irregularly quadrilateral anterior orbital, and two small posterior orbital plates, rounded and nearly of the same size; back of these are two or three large temporal plates; the upper jaw is covered with seven quadrilateral labial plates, the largest being behind, and the third and fourth forming the lower part of the orbit of the eye. The nostrils are lateral and near the snout; the eyes are small but prominent; the pupil dark; the iris reddish-gray. The neck is nearly the size of the head; the body greatly elongated and nearly cylindrical, becoming suddenly smaller at the tail, which is short, small and pointed.

Colour. The head is black in front, with a bright yellow band at the occiput, running forwards and downwards under the lower jaw, narrower above and broader below. The ground of the colour of the body above as well as below, is jet black, surrounded by about seventeen crimson rings, each with a yellow border both anteriorly and posteriorly, and having two or three black spots on the abdomen. The tail is black, with three or four yellow rings; the tip is yellow.

Dimensions. Length of head, 7 lines; greatest breadth of head, 5 lines; length of body, 20 inches. In the specimen described, there were two hundred and twelve abdominal plates, and thirty-two pair of subcaudal scales.

Habits. They are found in common with the Coluber coccineus and Coluber elapsoides, living under ground in the fields where the sweet potato (Convolvulus

batata) is cultivated; the labourers frequently dig them up when harvesting the potatoes in autumn. The individuals I have seen have been of very mild character, and could not be induced to bite under any provocation whatever. Indeed, although possessed of poisonous fangs, they are universally regarded as innocent snakes, and are constantly handled with impunity, never to my knowledge having injured any one. It is worthy of remark that this animal, which is the true representative of the dreaded Elaps lemniscatus of South America, should be so gentle and harmless, although possessed of the same instruments of destruction.

Geographical Distribution. The range of the Elaps fulvius may, for the present, be said to begin in North Carolina and southern Virginia, whence it extends through Georgia, Florida and Alabama, to the south-western and western states, where it seems to be widely distributed. I have received specimens from the Red river; and Audubon, in his magnificent work on Ornithology, has given a good drawing of one taken in Louisiana; and Professor Green, of Philadelphia, has one brought by Lewis and Clark from the Upper Missouri.

General Remarks. The Elaps fulvius was first described in the twelfth edition of the Systema Naturæ of Linnæus, from a specimen sent him by Dr. Garden, under the name Coluber fulvius, which it has ever since borne. He erred, however, greatly in the description of its colours, which he says are black and yellow rings. This arose from his having observed the colours of a specimen that had been preserved in alcohol; yet in this he has been universally followed by naturalists.

It is a matter of great doubt which of our reptiles Catesby's beadsnake was meant to represent. It must, I think, be either the Coluber coccineus of Linnæus, or the Elaps fulvius; the disposition of the spots on the back agrees best with the former; yet the colours, red, black and yellow, belong to the latter animal, which he probably had in view, though not disposed in rings. This, however, would be no evidence that it is not the same snake, as Catesby is notoriously incorrect in his colouring; so much so, that few of his snakes could be recognised by the colour alone he assigns them; for there is quite as great a resemblance in colour, in my

opinion, between his beadsnake and the Elaps fulvius as there is between his water viper and the living Trigonocephalus piscivorus, or his small rattlesnake and the Crotalus miliarius. Yet Dr. Garden's criticism* on him, in his letter to Linnæus, is too severe: "It is sufficiently evident that his sole object was to make showy figures of the productions of nature, rather than to give correct and accurate representations. This is rather to invent than to describe; it is indulging the fancies of his own brain, instead of contemplating and observing the beautiful works of God."

Catesby did much; his drawings were done in the infancy of the art, as applied to natural history, and those of his reptiles and fishes are the very worst part of his work.

It may furthermore be said, that this animal has been from time immemorial called in Carolina the beadsnake, as the Coluber guttatus has been known under the name of the cornsnake.

* Smith's Correspondence of Linnæus, &c., vol. i. p. 300.

Coluber erythrogaster

19

COLUBER ERYTHROGASTER.

Plate XIX.

Characters. Head elongated; body long, covered with carinated scales above; whole superior surface of animal brick-dust colour, with a tinge of green at the sides; abdomen and tail uniform copper colour.

Synonymes. Coluber erythrogaster, *Shaw*, Gen. Zool., vol. iii. p. 458.
Copperbellied snake, *Catesb.*, Carolina, &c., vol. ii. p. 46.
Copperbelly, *Vulgo.*

Description. The head is large, but elongated and rather pointed at the snout, and covered with large plates. The vertical plate is regularly pentagonal, broadest in front; the superior orbital are quadrilateral, elongated, narrow. The occipital are irregularly pentagonal, broadest anteriorly. The frontal plates are quadrilateral and large; the anterior frontal are of similar shape, but small. The rostral is large and semicircular, concave below, convex above. There are two nasal plates, quadrilateral, and nearly of the same size; the anterior is concave posteriorly, and the posterior lunated in front. There is but one anterior orbital plate, and three posterior, smaller, and nearly quadrilateral. The inferior wall of the orbit is completed by the fourth and fifth labial plates, which are eight in number, quadrilateral, and largest posteriorly. The nostrils are lateral, and very near the snout. The eyes are large and bright; the pupil dark, the iris gray, with a tinge of red. The neck is contracted; the body very long, and covered with carinated scales to the abdomen. The tail is long, cylindrical, and terminates in a point; covered with carinated scales above, and bifid plates below.

Colour. The whole superior surface of the animal, body, head, neck and tail, is brownish-red; the sides are tinged with green near the abdomen; the whole inferior surface is uniform copper colour.

Dimensions. Length of head, 1½ inches; greatest breadth of head, 11 lines; length of body, 32 inches; length of tail, 11 inches. The specimen described had one hundred and sixty abdominal plates, and seventy-seven pair of subcaudal scales.

Habits. The habits of the Coluber erythrogaster seem closely allied to those of the Coluber fasciatus; they are found in similar localities, and live on similar food, though the former is less numerous than the latter.

Geographical Distribution. I have never hitherto heard of the existence of this snake northward of South Carolina; its range extends through that state, Georgia, Alabama, and along the northern shores of the Gulf of Mexico. Professor Green, of Philadelphia, has in his possession a specimen taken as far west as Amity county, Louisiana.

General Remarks. This animal was first described by Catesby, who gave a pretty good drawing of it. The next notice is in Shaw's General Zoology; since which work it has been overlooked by some naturalists, and by others referred to the Coluber porcatus of Bosc.

Coluber fasciatus.

20.

Sera. jonal

P.S. Duval, Lith^r Phal^x.

COLUBER FASCIATUS.—*Linnæus.*

Plate XX.

Characters. Head large, elongated, flattened, broader behind, rounded at the snout, and covered with plates; body elongated, thick, covered with carinated scales, dusky, with about thirty oblong or triangular marks of red on the flanks.

Synonymes. Coluber fasciatus, *Lin.*, Syst. Nat., vol. i. p. 378.
Coluber porcatus, *Latr.*, Hist. des Rept., tom. iv. p. 82, pl. xxix. fig. 1.
Coluber porcatus, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 204.
Coluber porcatus, *Bosc*, Nouv. Dict. d'Hist. Nat., tom. viii. p. 264.
Coluber porcatus, *Harl.*, Med. and Phys. Res., p. 119.

Description. The head is flattened and much elongated, broader behind, and rounded at the snout; its superior surface is covered with plates. Of these, the vertical is pentagonal, largest in front and pointed posteriorly; the superior orbital are elongated and quadrilateral, with their outer margins prominent; the occipital are very large, irregularly oblong, broadest internally. The frontal plates are pentagonal, smallest without; the anterior frontal are smaller, trigonal, with their apices directed forwards, and truncate. The rostral is semicircular, concave below, convex above. The two nasal plates are quadrilateral; the anterior concave behind, and the posterior concave in front. There is but one anterior orbital plate, which is very large, quadrilateral, and reaching from the frontal to the labial line. There are two posterior orbital plates; the superior is the largest. This and the anterior orbital plate is prolonged to form a large portion of the inferior part of the walls of the orbit, which is completed by a narrow infra-orbital plate, resting on the labial row. There are eight labial plates, increasing

in size to the sixth, and then diminishing. The nostrils are lateral, large, and near the snout. The eyes are large and bright; the pupil black; the iris gray, with a tinge of red. The neck is smaller than the head, and covered with carinated scales. The body is long, but thick, and covered with very strongly carinated scales above, which give an exceedingly rough appearance; below it is covered with plates. The tail is long and thick.

Colour. The head is dark brown, with the superior labial plates dirty reddish-white, marked with darker lines that distinguish the junction of the plates. The body above is very dark brown, with irregular oblong or triangular purplish-red spots on the flanks, which are insensibly lost about midway between the abdomen and vertebral line. These, however, are much more extensive in the young than in the adult, as well as much brighter. In old animals they become nearly obsolete, so that the whole superior and lateral surface becomes of a brownish colour; it then requires washing to bring out the red spots; and even this may not succeed, unless the animal has recently shed its skin.

Dimensions. Length of head, 1½ inches; greatest breadth of head, 11 lines; length of body, 20 inches; length of tail, 8 inches; circumference of body, 5 inches. In the specimen described there were one hundred and forty abdominal plates, and forty-two pair of subcaudal scales.

Habits. The Coluber fasciatus lives most of its time in water or about the banks of ponds and rivers, preying on frogs and other smaller reptiles that frequent the same localities. It swims with great rapidity, and hundreds at a time may be seen darting through the water in all directions, constantly protruding their tongue, as if to feel the objects before them. It is a bold animal, even in confinement, and is one of the very few snakes that will in such a situation readily devour its prey. In summer it rests on the lower branches of such trees as overhang the water, as the Trigonocephalus piscivorus, and is doubtless a much better climber.

Geographical Distribution. I would assign, for the present, North Carolina

or southern Virginia for the northern limit of the Coluber fasciatus; beyond that its place is supplied by the Coluber sipedon. How far south and west it may reach cannot be stated with certainty; I have received it from Louisiana, and all the intermediate states.

General Remarks. There is, in my opinion, no doubt that this is the animal sent by Dr. Garden to Linnæus, and by him described as the Coluber fasciatus, as the general colouring, the particular marks, its habitat, and the carinated scales, all go to prove. Linnæus himself seems to have hesitated to which of Catesby's animals he should refer the one sent by Dr. Garden, for he quotes the wampum snake with doubt, which it cannot be, as in this the scales are carinated, and in that, which is probably the Coluber abacurus of the first volume of this work, they are smooth; yet in this reference he has been almost universally followed by naturalists. My belief is, that he should have referred it to the brown viper of Catesby,* which was probably drawn from a specimen imperfectly coloured; for not unfrequently the old Coluber fasciatus, before it has shed its skin, resembles nearly Catesby's plate, with the exception of the fangs. Another reason for believing that the animals are identical is, that after twelve years' search, both in Carolina and in Virginia, where he represents the brown viper as abounding, under the name truncheon snake, I have never seen any animal bearing the least resemblance to Catesby's figure, except the Coluber fasciatus; and my friend Professor Geddings, who, during a residence of some years in the lower districts of Carolina, where he observed these animals closely, is of the same opinion. The fangs of Catesby's figure, and the "bite venomous as any" of his description, must go for nothing; for he saw the same thing and figured similar fangs for the black viper, where they never exist, and which is now known to be a harmless animal. If this opinion be correct, and the animals are identical, and of that I have little doubt, then the brown viper must be stricken from the list of serpents, and its synonymes transferred to the Coluber fasciatus, as the Coluber tisiphone, Scytalus tisiphone, &c. &c.

* Catesby's Carolina, &c., vol. ii. pl. xlv.

Heterodon platirhinos.

21.

P.S. Duval, Lith.t Phil

Serp. pinat

HETERODON.—*Palisot de Beauvais.*

Genus Heterodon.—Characters. Plates and scales as on the Colubri; the rostral plate a trihedral pyramid, with a ridge above and pointed at the tip; posterior maxillary teeth largest.

HETERODON PLATIRHINOS.

Plate XXI.

Characters. Head short, flattened, triangular, turned up and pointed at the snout, a strong ridge on the rostral plate above; body grayish or yellowish-gray above, with large blotches or transverse bars or oblong spots of black; abdomen dirty white. Pl. 144, sc. 42.

Synonymes. Coluber heterodon, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 153, fig. of head pl. lx. fig. 28.
Coluber heterodon, *Say*, Amer. Jour. Arts and Scien., vol. i. p. 261.
Coluber heterodon, *Harl.*, Med. and Phys. Res., 120.

Description. The head is large, flat, triangular, broad behind, with the snout pointed and elongated at the tip; it is covered with scales on the posterior part, and with plates on the anterior and on the vertex. The vertical plate is regularly pentagonal, with its broadest point directed forwards. The superior orbital are quadrilateral, elongated, and broadest posteriorly, with their outer margins pro-

jecting over the eye, which gives a sinister look to the animal. The occipital plates are rhomboidal. The frontal are quadrilateral, with their anterior inferior angles very much prolonged; the anterior frontal are triangular, with their bases directed inwards, and their apices rounded and turned to the nostrils. Between these frontals, so as to prevent them coming in contact with each other, is a narrow elongated azygous plate, reaching from the posterior frontal to the rostral plate, with a ridge on its upper surface continuous with that of the rostral plate. The rostral plate is triangular, with its basis below and the apex very pointed above, and recurved, with a strong carina or ridge on the upper surface. The nostril plates are two on each side; the anterior is irregularly quadrilateral, lunated on the posterior margin, with its anterior and inferior angle greatly prolonged; the posterior is narrow, and concave in front to complete the nostril. There are twelve orbital plates, the superior of which have been already described. Besides these, there are three anterior orbital plates, which are quadrilateral, the largest being above; the inferior orbital are five and the posterior orbital three in number, all of which are quadrilateral. The upper jaw has six lateral plates, quadrilateral, and increasing in size to the sixth, which is longest. The nostrils are very large, near the snout, and lateral. The eyes are large; the pupil dark, the iris light gray. The neck is nearly the size of the head when he is quiet, but when roused or irritated he flattens it more than twice its ordinary breadth. The body is elongated, thick, rounded above, but flattened at the abdomen, covered with scales strongly carinated above, the three inferior lateral rows being ecarinate, and with plates below. The tail is long, narrow, and terminating in a point, with scales or bifid plates on its under surface.

Colour. The head above is dusky, with a light band between the orbits; behind the occiput is a dark spot; a dark band begins at the back of each nostril, which increases in size as it descends, and forms a large blotch on the side of the neck. The body is olive-brown, or sometimes brownish-yellow, and marked with a triple series of black or dark gray spots; those of the vertical series being subquadrate and elongated transversely; the spots of the lateral rows are rounded, and many of them correspond with those of the vertebral line, while others

alternate with them. Sometimes the spots of the lateral and vertebral lines are confluent, so as to give the appearance of bands.

Dimensions. Length of head, 1½ inches; breadth of head, when not disturbed, 1 inch; length of body, 27 inches; length of tail, 5 inches; circumference of body, 4½ inches. In the individual here described, there were one hundred and forty-four abdominal plates entire, and two bifid plates near the vent; and forty-two pair of subcaudal scales.

Habits. The Heterodon platirhinos is a harmless snake, choosing moist places and feeding on toads, small reptiles and insects. Though a harmless, yet it is a bold animal when disturbed; it coils itself after the manner of the rattlesnake, though not so closely, assumes a threatening attitude, by flattening the head and three or four inches of the neck, which it lifts and waves with an undulating motion, hissing loudly at the same time; he projects his head with a sudden motion, as if to bite any object presented to him. It is remarkable, however, I have never seen him bite or lay hold of the object, at least in the many times that I have tried the experiment. It may be worried with the end of a walking stick or cane, or pushed roughly from place to place, yet cannot be provoked to open its mouth, though it often advances its head with a threatening air towards the object in his way. At times it exhibits the instinct of some insects to remain perfectly quiet and motionless, as if dead, to elude its tormentor; in this state it will remain several minutes. The first time this phenomenon came under my observation, I thought the animal had been unintentionally killed by rough handling; and it was only after witnessing the same thing in many others that I came to the conclusion that it was done at will.

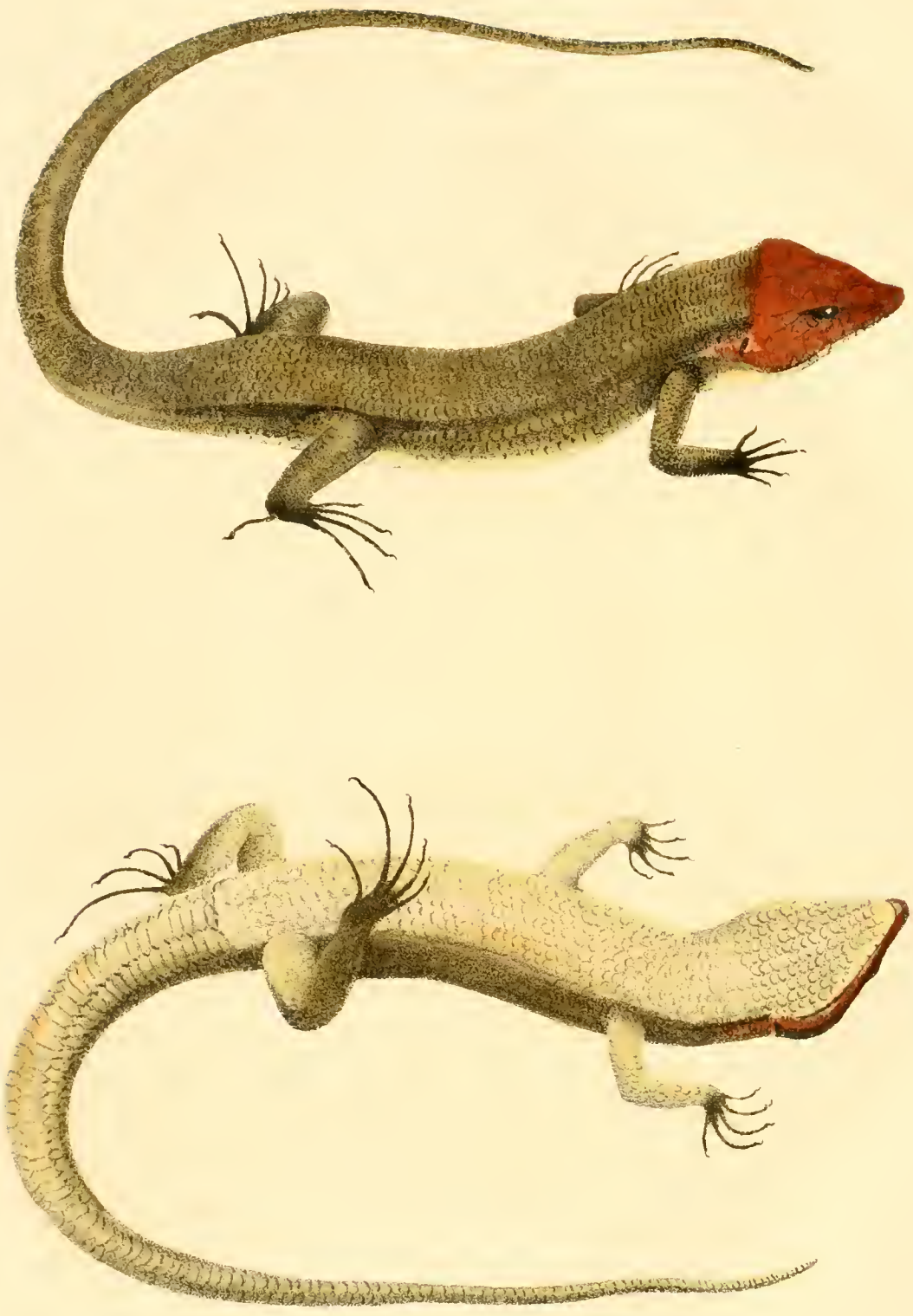
Geographical Distribution. The Heterodon platirhinos is found in all the Atlantic states from New Hampshire to Florida. I have also received specimens from Alabama and Louisiana; it no doubt inhabits the western states generally. Dr. Pickering informs me that he has seen them from as far west as the Engineer cantonment on the Missouri. It is probable that the heterodon annulatus of

Troost* is only a variety of this, for it is not uncommon to see individuals more or less annulated.

General Remarks. There can be no doubt that this is the Heterodon platirhinos of Latreille, from his description, as well as from the geographical distribution given it. This species of Heterodon is found in New Jersey, where Palisot de Beauvais first observed it, and from which state the animal here described was also received. It seems to me very clear that we have three species of Heterodon in the Atlantic states—Heterodon platirhinos, Heterodon niger, both described in this volume, and the Heterodon limus of Linnæus, which differs in several respects from the platirhinos; as in size, in having the neck smaller, in colour and markings, in the form of the rostral plate, and in having the azygous plate between the anterior frontal plates surrounded with small scales; as well as in being confined to the southern and western states.† It is one of the most common reptiles on the sea coast of Carolina and Georgia, abounding in the cotton fields of the sea islands.

* Ann. Lyc. N. Y., vol. iii. p. 188.

† It seems to me highly probable that the Heterodon tigrinus of Troost is the Heterodon simus, but of this I cannot speak positively, having never yet seen his animal, and must leave it to be determined in a future volume.



Sincus erythrocephalus.

22.

SCINCUS ERYTHROCEPHALUS.—*Gilliams.*

Plate XXII.

Characters. Head large, broad behind, and covered with plates; snout elongated and rounded; body olivaceous; head bright red; jaws armed with strong teeth.

Synonymes. Scincus erythrocephalus, *Gilliams,* Jour. Acad. Nat. Scien. Phil., vol. i. p. 461, pl. xviii.
Scincus erythrocephalus, *Harl.*, Jour. Acad. Nat. Scien., vol. vi. p. 11.
Scincus Americanus, *Harl.*, Med. and Phys. Res. p. 138.
Scorpion, *Vulgo.*

Description. The head is large, broad behind, contracted in front of the eyes, narrow, but rounded at the snout. The vertical plate is pentagonal, narrow behind, broader, with an acute angle before. There are five superior orbital plates that make the ridge above the eyes. The occipital plates are five in number; the two anterior small and rhomboidal; the two posterior quadrilateral and large, with a long narrow pentagonal plate between them. The frontal plates are pentagonal; the anterior frontal are smaller and rhomboidal; wedged in between the frontal and anterior frontal is a large hexagonal plate, reaching to a plate behind the nares. The rostral plate is triangular, smaller, and rounded above. The nasal plate is single, and rhomboidal in shape; between this and the orbit are three plates, the smallest in front, the largest behind. There are three anterior orbital plates, the middle one of which is the largest; and three posterior, the upper being the largest. The lower margin of the orbit is completed by the sixth and seventh labial plates, of which there are eight; the posterior very large.

The nostrils are large, latero-superior, and near the snout. The eye is small; the iris dark; the pupil the darkest gray. The entrance to the external ear is large and triangular; the bars of the triangle upwards. The neck is so contracted as to give a swollen appearance to the posterior part of the head.

The body is elongated, rounded, and covered with smooth imbricated scales, arranged in longitudinal rows, both above and below, with two or three large scales in front of the vent. The tail is thick at the root, but soon becomes small, cylindrical, and greatly elongated; it is covered with imbricated scales above, like the back; but below there is a central row resembling plates, with scales on either side to about one-third of the distance, when the scales disappear, and the plates are continued, as in some of the serpent tribe.

The anterior extremities, as well as the posterior, are short, thick, and strong; the former terminating in five fingers, the latter in five toes, all of which are armed with short, small, curved nails.

Colour. The head above is bright red. The body and tail above are olive, a little darker on the sides. The throat and abdomen are yellowish-white.

Dimensions. Length of head, 1 inch 3 lines; greatest breadth of head, 1 inch; length of neck and body, 3 inches; length of tail, 7 inches; total length, 11 inches 3 lines.

Habits. The Scincus erythrocephalus is found principally about the hollows of trees, often at a height of thirty or forty feet from the ground, sometimes taking up his abode in the woodpecker's last year's nest; he never makes his habitation on or near the ground. Though shy and timid, he is very fierce when taken, and bites severely, owing to the great strength of his jaws, as well as his savage temper. The bite, however, though sharp and painful, is not, as is commonly supposed, venomous. His food is insects.

Geographical Distribution. The range of this animal is from latitude 39° to the Gulf of Mexico in the Atlantic states.

General Remarks. This species of Scincus was first described by Gilliams. Lawson, in his History of Carolina, speaks of a lizard called the Scorpion, but he does not mention the red head, which is the distinctive character of this; and Pennant, in the supplement to his Arctic Zoology, has only quoted Lawson.

Temminck and Schlegel* consider this animal identical with the Scincus quinquelineatus, differing in appearance only from age or sex; and other naturalists consider the Scincus fasciatus and Scincus quinquelineatus as one and the same—when a single glance at its compressed snout and broad head at the occipital region, is enough to distinguish it from all other of our skinks, without considering the wide difference in their geographical distribution. Troost is said to have furnished Temminck and Schlegel with those specimens, the examination of which led them to the above conclusion. Now, though he may have sent them all from Tennessee, he certainly never found them all in that state. The Scincus erythrocephalus is a southern animal, and was perhaps never seen within two hundred miles of Nashville, the residence of my friend Troost; yet he may have received it from Louisiana or Mississippi, from which states I know he has obtained many reptiles. The Scincus quinquelineatus is also a southern animal, but has a much more extended geographical range, ascending high up the Valley of the Mississippi, though in the Atlantic states I have never heard of its existence north of lat. 35°. And lastly comes the Scincus fasciatus, which reaches from Massachusetts, more than five hundred miles beyond the northern limit of the Scincus quinquelineatus, to the Gulf of Mexico; yet to this moment I have no evidence of its existence west of the Alleghany mountains. That these three species of skinks are not identical, I believe, from having observed them many times in their breeding season, and never are they paired together; indeed, their very habits are different. The Scincus erythrocephalus chooses its residence in deep forests and high places, and is seldom seen on the ground, unless in search of food; while the Scincus fasciatus and Scincus quinquelineatus, though climbing with facility, choose as

* Siebold, Faun. Japon. Reptilia, by Temminck and Schlegel, p. 99.

their abode the roots or trunks of fallen and decaying trees, and are frequently found in open ground and about fences.

Nor can I believe with Temminck and Schlegel, that our Scincus quinquelineatus is identical with a Japanese animal, though there may be great resemblance between them. Similar animals are frequently found within similar parallels of latitude, or, it might rather be said, where the temperature is nearly the same. Thus, in France and Germany are found the common toad, Bufo vulgaris, the Rana esculenta, the Rana temporaria, all of which are beautifully represented in the northern parts of the United States by the Bufo americanus, the Rana halecina, and the Rana sylvatica; while in South Carolina many of the animals of Egypt (nearly in the same parallel) are represented by many closely allied species—the crocodile by the alligator, the Trionyx ægyptiacus by the Trionyx ferox, &c. &c. Yet none of these animals are identical.

Too much attention cannot be paid to the geographical distribution of animals, as no species can be considered as thoroughly known until we are acquainted with all its localities, as well as its habits.

It is from inattention to the geographical distribution of animals that some of the best zoologists of our day have been led into error, and described animals as existing in countries where they are never seen. Thus Dumeril and Bibron, having received specimens of the Anolius carolinensis from Milbert, then a resident at New York, and also from Georgia, say they have reason to believe it is found in a great part of the United States—and so it would be did it exist in the intermediate countries between New York and Savannah; but in truth its limits are among the most circumscribed of all our animals; it is not found farther north than lat. 34°, and consequently not within six hundred miles of New York; and its southern limit being the Gulf of Mexico, it follows then that four-fifths of the United States is not inhabited by this animal. Milbert received his specimens from the south, and afterwards sent them to Paris. Again: they say they have received a Cyclurus from the same source, and suppose it to be common in our country, where, perhaps, never were seen half a dozen living animals of that species, and they were all brought from Cuba, and other West India islands, which is its native country.

Heterodon niger.

23.

HETERODON NIGER.—*Catesby.*

Plate XXIII.

Characters. Head flattened, triangular, covered with plates in front and with scales behind; snout pointed, and turned upwards at the tip; whole animal black above, and bluish slate-colour below. Pl. 127, sc. 50.

Synonymes. Black viper, *Catesb.*, Carolina, vol. ii. p. 44, pl. xliv.
Scytale niger, *Daud.*, Hist. Nat. des Rept., tom. v. p. 341.
Coluber cacodemon, *Shaw*, Gen. Zool., vol. iii. p. 377, pl. cii.
Pelias niger, *Merrem.*
Coluber thraso, *Harl.*, Med. and Phys. Res., p. 120.
Scytalus niger, *Harl.*, Med. and Phys. Res., p. 130.
Heterodon niger, *Troost*, Ann. Lyc. Nat. Hist. N. Y., vol. iii. p. 186.

Description. The head is large, flattened, triangular; broader behind, narrow and pointed in front, covered with scales posteriorly and with plates anteriorly. The vertical plate is pentagonal, broadest in front. The superior orbital are irregularly quadrilateral, broadest behind, with their outer margins projecting. The occipital plates are rhomboidal; the frontal elongated and pentagonal; the anterior frontal triangular, their bases inwards, and their apices reaching almost to the nares; between their bases is an additional long narrow plate, elevated above to form a ridge. The rostral plate is triangular, the base directed downwards, the apex upwards and pointed, with an elevated ridge on its upper surface. The nasal plates are two; the anterior is round in front and above, and concave behind; the posterior is narrow and lunated in front, to complete the opening of the nostril. The anterior orbital plates are four in number, and nearly quadri-

lateral; the superior is largest. There are two inferior orbital and three posterior orbital, all quadrilateral. The upper jaw has eight lateral plates, all quadrilateral, and increasing in size to the seventh, which is the largest. The nostrils are large, lateral, and near the snout. The eyes are large; the pupil black, the iris very dark gray. The neck is the size of the head, and covered with carinated scales. The body is elongated, but short, thick, and rounded above, flattened at the abdomen, covered above with larger scales than those of the neck; these are carinated, but less distinctly than those of the Heterodon platirhinos. The tail is long, small, cylindrical, and pointed at the tip.

Colour. The colour above is uniformly black; below it is whitish at the throat, and bluish slate-colour on the abdomen and tail.

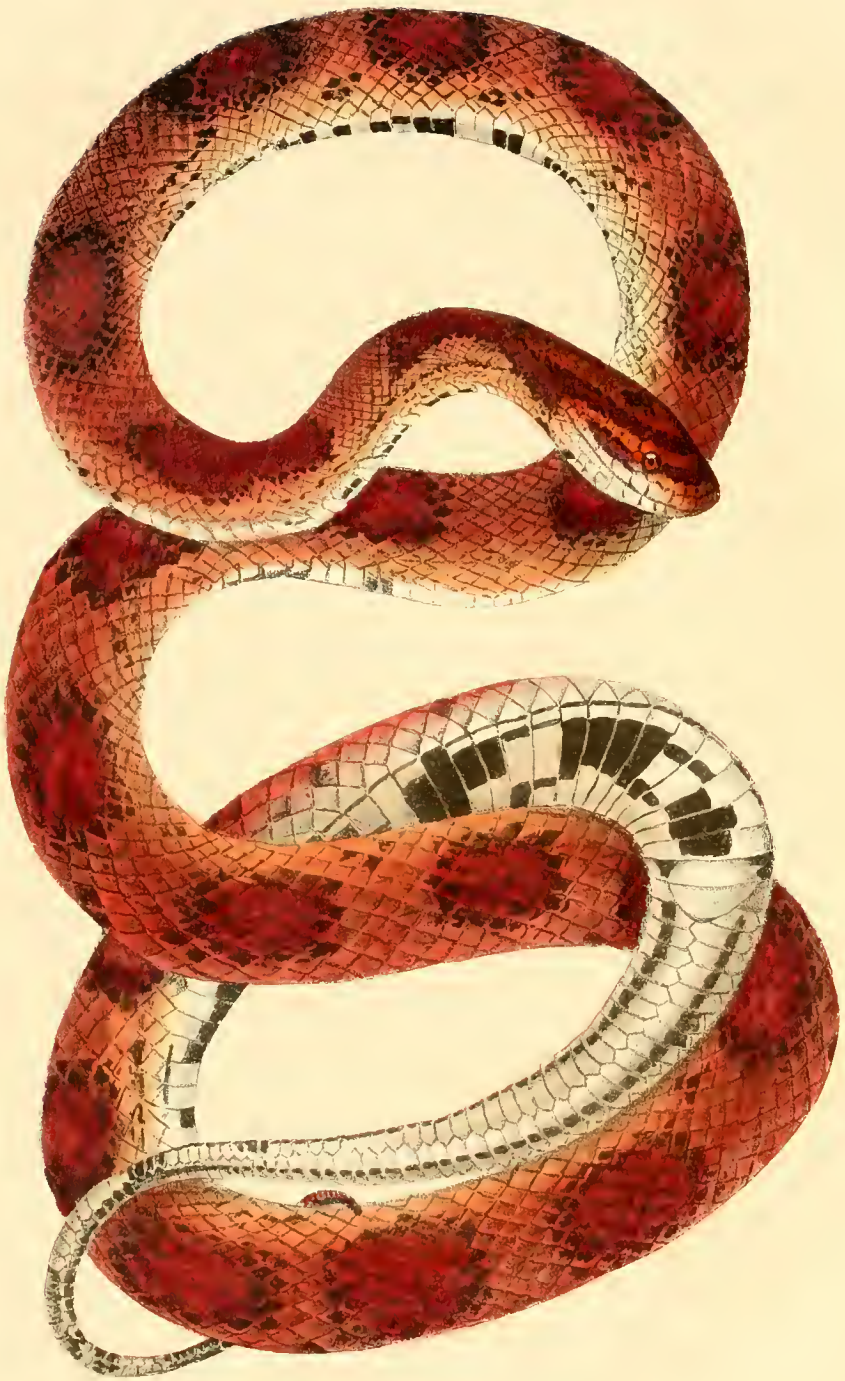
Dimensions. Length of head, 1 inch 3 lines; breadth of head, when not flattened, 9 lines; length of body, 15½ inches; length of tail, 4½ inches; circumference of body, 3 inches 2 lines.

Habits. The Heterodon niger has similar habits to the Heterodon platirhinos, but in general it seems to choose drier places for its abode, and are not uncommon in the pine barren districts. It has the same power of flattening the head and neck, and "threatening with a horrid hiss;" its dark colour, its sinister look and menacing attitude, have led to the common belief of its being a venomous snake. Even Catesby represents it as "having the like fangs of destruction as the rattlesnake." It is, however, a harmless snake, feeding on smaller reptiles.

Geographical Distribution. The Heterodon niger is rarely found as far north as Pennsylvania, but is one of the most common snakes in the lower part of Carolina and Georgia. I have also received it from Alabama and Louisiana, and there can be little doubt of its existence throughout the western country, as I have Professor Troost's testimony in proof of its belonging to Tennessee.

General Remarks. There can be no doubt that this animal was first described

by Catesby; later naturalists having only copied his description, or his plate, which is one of the best in his work. Daudin and others speak of a black variety of Heterodon, which has reference no doubt to this animal. I cannot, however, consider it as a variety of any Heterodon, but as a distinct and separate species. It cannot be a variety of the Heterodon simus, because the plates of the head are so entirely different; besides it is a much larger animal. It bears rather more resemblance to the Heterodon platirhinos; from which it differs, however, considerably, in the number of its abdominal plates and in its colour, which is so constant that it must be taken as an essential character in distinguishing the species. It differs furthermore from the Heterodon platirhinos in its habits, preferring dry places; while the platirhinos selects rocky, shady, and damp situations. Finally, there would seem to be a difference of geographical distribution; at least in some parts of the United States. Thus, in Carolina the Heterodon platirhinos is common in the upper districts of the state, and I have never heard of the black viper being found there; while the reverse is true of the sea board: here the Heterodon niger is very common—the Heterodon platirhinos seldom found.



Coluber guttatus.

24

N. A. inv.

on Stone by G. Lehman.

Lemman & Duval Lith.rs

COLUBER GUTTATUS.—*Linnæus.*

Plate XXIV.

Characters. Head small, narrow, elongated, snout obtuse; colour above reddish-brown, marked with oblong transverse spots of brick-dust colour, with darker borders; abdomen white, marked with alternate quadrilateral black spots. Abd. sc. 126, caud. sc. 64 pair.

Synonymes. Coluber guttatus, *Lin.*, Syst. Nat., vol. i. p. 385.
Cornsnake, *Catesb.*, Carolina, vol. ii. p. 55, pl. lv.
Coluber guttatus, *Gmel.*, Syst. Nat. Lin., tom. i. p. 1110.
La mouchetée, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 282.
La tachetée, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 329.
Coluber molossus, *Daud.*, Hist. Nat. des Rept., tom. vi. p. 269.
Coluber guttatus, *Daud.*, Hist. Nat. des Rept., tom. vi. p. 261.
Coluber maculatus, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 217.
La couleuvre cannelée, *Latr.*, Hist. Nat. des Rept., tom. iv. p. 110.
Coluber carolinianus, *Shaw*, Gen. Zool., vol. iii. p. 460.
Coluber pantherinus, *Merrem*, Beyträg. ii. s. 49, tab. xxi.
Natrix pantherinus, *Merrem*, Versuch. eines Syst. der Amph., p. 132, spec. 39.
Coluber guttatus, *Harl.*, Med. and Phys. Res., p. 126.
Coluber floridanus, *Harl.*, Med. and Phys. Res., p. 124.
Coluber maculatus, *Harl.*, Med. and Phys. Res., p. 125.
Coluber molossus, *Harl.*, Med. and Phys. Res., p. 126.
Cornsnake, *Vulgo.*

Description. The head is narrow and elongated, the snout obtuse. The vertical plate is pentagonal, with its largest border forwards. The superior orbital is

elongated, quadrilateral, with its outer margin but slightly projecting. The occipital plate is irregularly triangular, with its apex rounded and its basis directed forwards, and joined to the vertical and superior orbital. The frontal plates are pentagonal, and broadest internally; the temporal are small and variable. The rostral is pentagonal, large, projecting and obtuse. There are two small posterior orbital and one large anterior orbital plates. The upper jaw is covered with eight quadrilateral plates, two of which form the lower margin of the orbit. The nostrils are lateral, large, and near the snout. The eyes also are lateral and rather small; the pupil black, the iris reddish. The neck is cylindrical, rather smaller than the head. The body is greatly elongated. The tail is small, and tapers to a point.

Colour. The head is of a brick-dust colour above, with two bands of a much darker shade bordered with brown; the larger of these lines forms a semicircle, the convexity of which is near the snout, and the two ends passing across the eyes terminate at the occiput. The other forms an oval on the top of the head, following the figure of the anterior; in the midst of this is an oval spot of the same colour as the circles. The whole superior surface of the body is light brown, in which appears a reddish tinge; along the back is a row of large subquadrate spots of a deep brick-dust colour, bordered with the darkest brown. The sides are of a lighter shade than the back, with small spots; these also are lighter than the spots on the superior surface. The abdomen is silver white, with black squares irregularly dispersed and of unequal size; two or three close together occur on one side, and then on the other. Below the vent is a longitudinal line on each side, formed by a black spot on each scale; these become irregular, and meet across as they arrive at the tip.

Dimensions. Length of head, 1 inch 2 lines; breadth of head, 7 lines; length of body, 39 inches; length of tail, 7 inches; greatest circumference of body, 3 inches 11 lines; total length, 47 inches 9 lines. They sometimes grow to a greater size than this—I have seen one nearly six feet in length.

Habits. The Coluber guttatus is very commonly observed about the road side early in the morning or at the dusk of evening; unlike most snakes, concealing itself during the day. It is very gentle and familiar, frequenting the neighbourhood of settlements, and at times entering houses; and is, according to Catesby, "a great robber of hen-roosts."

Geographical Distribution. At present I can only give North Carolina as the northern boundary of the Coluber guttatus; beyond this its place is supplied by the Coluber eximius of Dekay, which it much resembles.

General Remarks. The Coluber guttatus seems to have been a great stumbling block to herpetologists, as may be seen by the great number of its synonymes. It is clearly discussed in the twelfth edition of the Systema Naturæ, and no mention is made of it in any of the previous editions. Linnæus described it from a specimen furnished him by Dr. Garden, and at the same time refers to Plate LX. of Catesby, though with doubt. What he did doubtingly, others have done boldly. Plate LX. of Catesby is the beadsnake, and not the Coluber guttatus of Linnæus; but his Plate LV. is the cornsnake, and agrees with the Coluber guttatus in every respect.

We next find this animal described by Lacépède, under the name la mouchetée; his description is good, and there can be no doubt of his meaning, for he refers to the Coluber guttatus of Linnæus; but he again errs in supposing the beadsnake of Catesby to be identical with it. Lacépède again describes the same animal under the name Coluber maculatus, (la tachetée,) from a specimen procured in Louisiana; the description of the colours agree perfectly well with the Coluber guttatus, but its abdominal plates are less numerous. Lacépède himself supposes he is describing the cornsnake, as he refers to Plate LV. of Catesby, and says they are common in Carolina and Virginia.

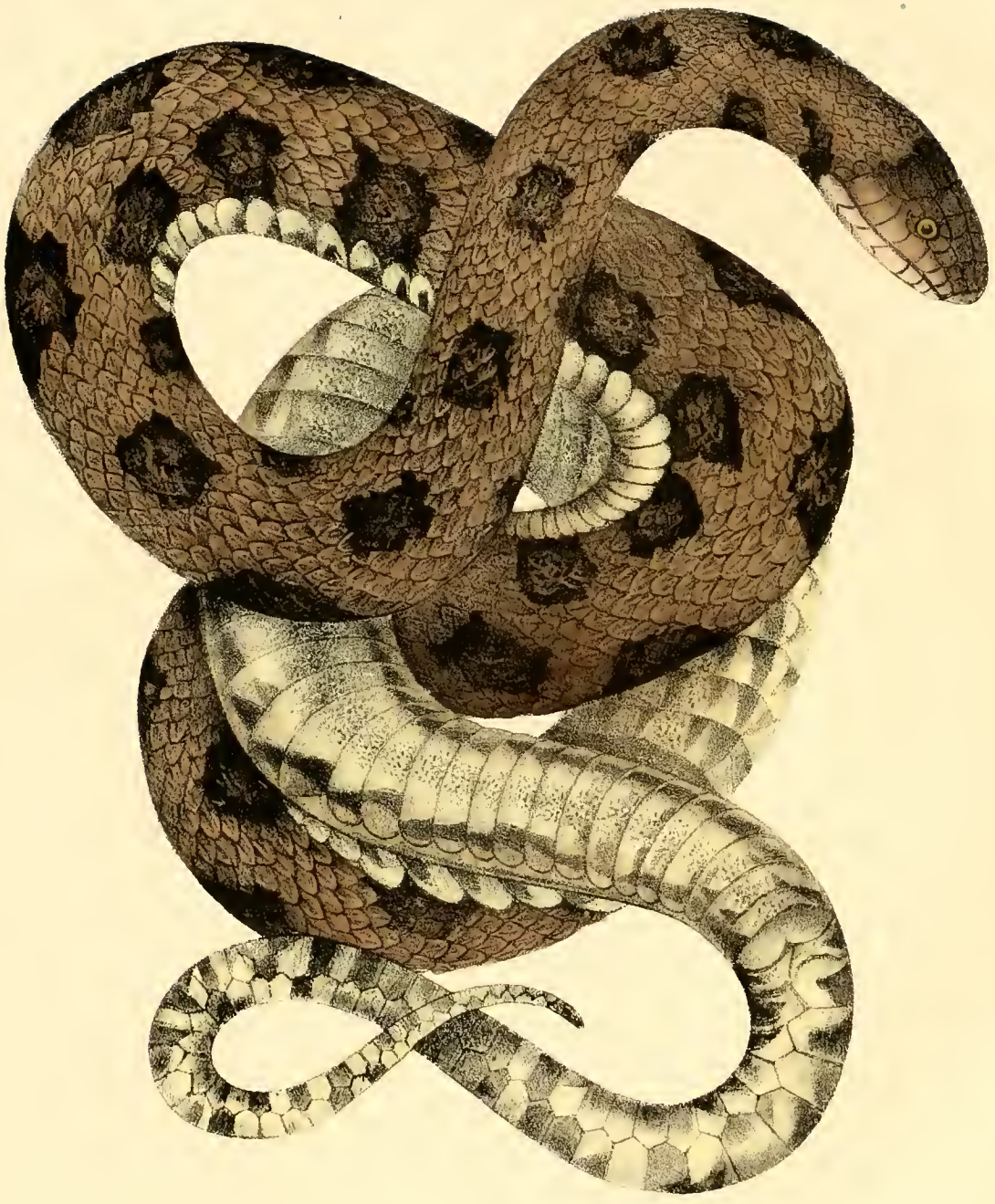
Latreille, at the end of his description of the Coluber molossus, gives an account of a serpent brought from Carolina by Bosc, which he thinks is closely allied to

the Coluber guttatus; with which it is indeed identical, as may easily be seen by referring to his description; but to increase the stock of names, he calls it "la couleuvre cannellée."

It is not a little singular that Bosc, who says he furnished this animal for Latreille, should have confounded it with the hog-nose, to which it bears not the slightest resemblance. It can only be accounted for by supposing that some other serpent fell by accident into Latreille's hands instead of the one intended; for there cannot be the least doubt that his description refers to the Coluber guttatus—a more correct one cannot be given; nor does it contain the slightest hint by which we can suppose that any Heterodon is meant.

There can be no doubt that the Coluber molossus of Daudin is the Coluber guttatus of Linnæus, from the number of its plates, disposition of its colours, &c.; especially as he says Bosc found it in Carolina, adding that it resembles the Boa constrictor.

Merrem, generally very accurate, overlooked the Coluber guttatus of Linnæus, and described the same animal as a new species, under the name Coluber pantherinus. Of this, one may easily be satisfied by a reference to his description, which is full and minute, but especially by looking at the figure accompanying it, which is excellent; the colour only is faulty, being evidently taken from an animal preserved in alcohol. The Coluber floridanus is only another name for the same animal. Dr. Pickering pointed out to me, in the Museum of the Academy of Natural Sciences, the specimen which has added this synonyme. Though much bleached, it is clearly identical with the Coluber guttatus.



Coluber taxispilotus.

25.

COLUBER TAXISPILOTUS.

Plate XXV.

Characters. Head oval, elongated, covered with large plates above; body elongated, but thick, light chocolate-brown, with a triple series of subquadrate and oblong black spots. Pl. 144, sc. 79.

Description. The head is elongated, oval, flattened above, and covered with large plates. The vertical plate is very regularly quadrilateral; the superior orbital is irregularly oblong, obtusely pointed anteriorly. The occipital are broad, rounded, and notched irregularly posteriorly; behind these are two large temporal plates on each side. The frontal are regularly hexagonal; the anterior frontal are triangular, with their apices truncated. The rostral plate is sub-pentagonal, rounded above, concave below. The nasal plates are double; the anterior hollowed behind, and the posterior concave in front, to form the nostril. There are two quadrilateral posterior orbital plates, nearly of the same size; there is but one anterior orbital, nearly a parallelogram. The inferior wall of the orbit is completed by the superior labial plate; there are eight of these, quadrilateral, the smallest anterior. The nostrils are large, latero-superior, and near the snout. The eyes are large and prominent; the pupil dark; the iris gray. The posterior part of the head and neck is covered with small carinated scales. The neck is slightly contracted. The body is elongated, but large, and covered with hexagonal and very strongly carinated scales, even to the margin of the plates of the abdomen. The tail is thick at the root, but soon becomes cylindrical, and is very long.

Colour. The head is dark brown; the whole superior surface of the neck and

body is a light chocolate-brown. Along the vertebral line is a series of subquadrate black spots, lighter in the centre, and on each flank a row of oblong spots or blotches of the same shade—sometimes in the same vertical line, sometimes alternating with those on the vertical line near the tail; the different series of spots are occasionally confluent, so as to form bars. The abdominal plates are dirty-white, most of them with a black spot near the extremity, and the centre dotted minutely with black.

Dimensions. Length of head, 1 inch 5 lines; length of body, 28 inches; length of tail, 5 inches 6 lines; total length, 35 inches. The individual here described had one hundred and forty-four abdominal plates, the posterior bifid, and seventy-nine subcaudal scales.

Habits. This animal is quite new to me; consequently I am ignorant of its habits. Dr. Geddings, however, informs me that it is a water snake.

Geographical Distribution. As yet only two specimens of this Coluber have come under my observation; one from the sea-board of South Carolina, the other from the neighbourhood of the Altamaha river in Georgia.

Coluber Punctatus

P. S. Pallas ad Nat. del.

COLUBER PUNCTATUS.—*Linnæus.*

Plate XXVI.

Characters. Head large, flattened; body above bluish-black; abdomen orange colour, with three longitudinal rows of spots; beneath the tail yellow, immaculate. Pl. 132, sc. 49.

Synonymes. Coluber punctatus, *Lin.*, Syst. Nat., vol. i. p. 376.
Little black and red snake, *Edwards*, Glean. Nat. Hist., vol. iii. p. 289.
Another small snake, *Edwards*, Glean. Nat. Hist., vol. ii. p. 291.
La ponctuée, *Lacép.*, Hist. Nat. des Serp., tom. ii. p. 287.
Coluber punctatus, *Latr.*, Hist. Nat. des Rept., tom. iv. part ii. p. 136.
Coluber punctatus, *Gmel.*, Lin. Syst. Nat., vol. i. part iii. p. 1089.
Coluber punctatus, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 178.
Coluber torquatus, *Shaw*, Gen. Zool., vol. iii. p. 553.
Natrix punctatus, *Merrem*, Versuch eines Syst. der Rept., p. 131, spec. 162.
Natrix edwardsii, *Merrem*, Versuch eines Syst. der Rept., p. 136, spec. 195.
Homolopsis punctatus, *Wag.*, Nat. Syst. der Amph., p. 191.
Coluber punctatus, *Harl.*, Med. and Phys. Res., p. 117.

Description. The head is small, flattened, about the size of the body. The vertical plate is triangular, with its basis forward and joined to the frontal. The superior orbital are quadrilateral and elongated, their outer margins projecting but very slightly. The occipital are irregularly triangular, broadest in front, and joined to the vertical, superior orbital, and superior posterior orbital. The frontal plates are irregularly quadrilateral; the anterior frontal are smaller and quadrilateral. The rostral is triangular, with its basis below and its apex above, and rounded. The nasal plate is quadrilateral, with its posterior margin incurvated.

The upper jaw is covered with eight large square plates, increasing in size to the angle of the mouth; two of these ascend to form the inferior wall of the orbit. There are two posterior orbital plates, the superior of which is the longer, and only one anterior orbital. The nostrils are lateral and near the snout. The eyes are large; the pupil dark, the iris gray. The neck is rather smaller than the head. The body is elongated, cylindrical, rounded above, and covered with smooth scales; the abdomen is flattened, and covered with plates. The tail is delicate and pointed.

Colour. The head is of a bluish-black colour, with a transverse blotch of yellowish-white on each side of the occiput, uniting to form a ring; the lips are white. The upper surface of the body is the same colour as the head, but this varies a good deal—sometimes almost black, at others approaching a chestnut-brown, finely dotted with gray. The abdomen is reddish-yellow, with three parallel rows of dark spots of subtriangular form, with their apices turned forward, one row of which runs in the mesial line. The tail is of similar colour with the body, both above and below, but wants the subtriangular spots.

Dimensions. Length of head, 5 lines; length of body, $6\frac{1}{2}$ inches; length of tail, 2 inches; circumference of body, 9 lines. In the individual here described there were one hundred and thirty-two abdominal plates and forty-nine subcaudal scales.

Habits. The Coluber punctatus is a very timid animal, living great part of the time concealed under the bark of trees or old logs and stones. It emerges from its hiding place towards the dusk of evening, or after rain, when the insects have been washed from their hiding places.

Geographical Distribution. This animal inhabits the Atlantic states from Maine to Florida inclusive.

General Remarks. The first notice of this animal is to be found in the

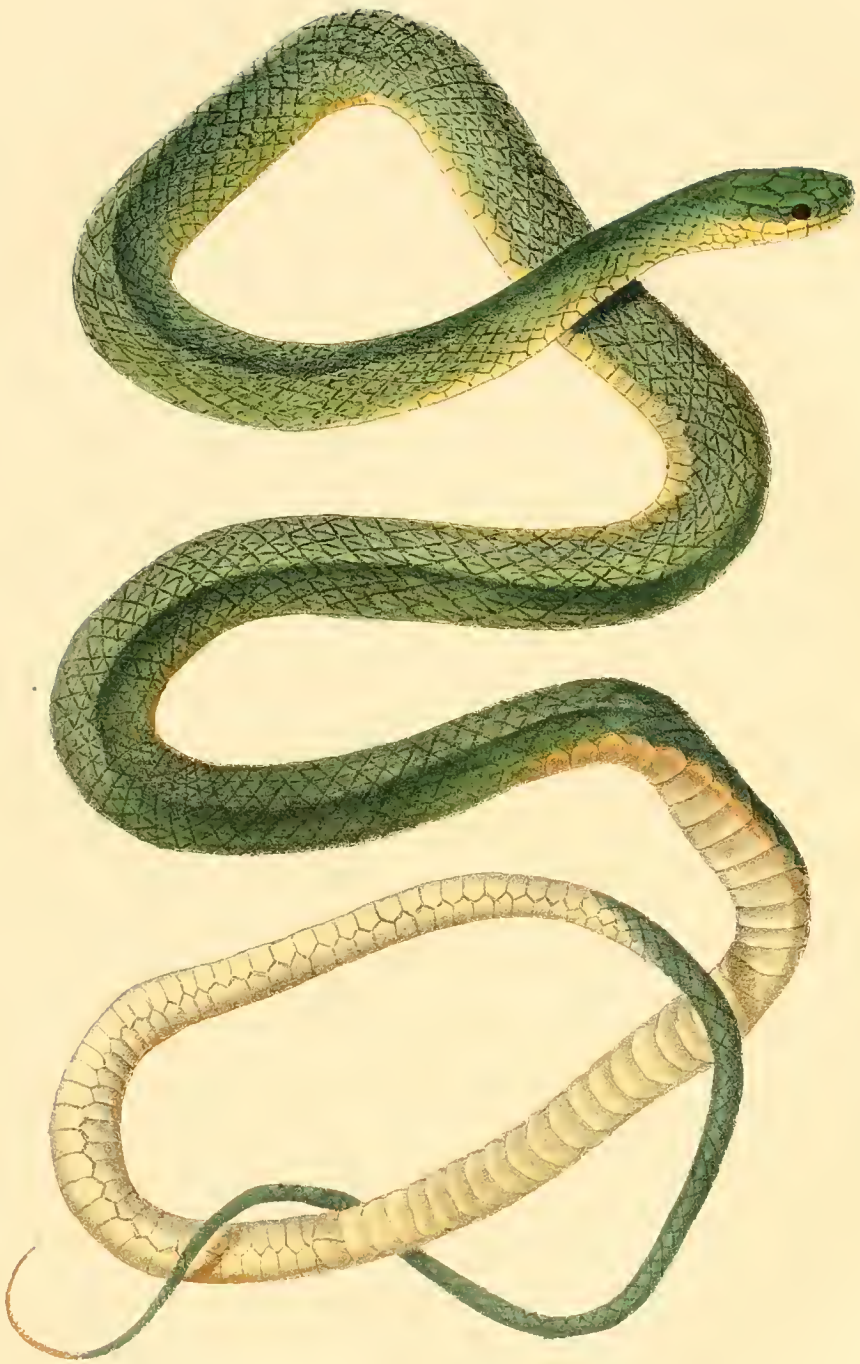
Gleanings of Natural History, by George Edwards,* where may be seen an excellent plate of it. He says it was sent to him by his friend Bartram, from Pennsylvania; that "its upper side, except a white ring round the neck, is of shining jet black; the belly, or under part, is of a fine light red, and the eyes flame colour." A second specimen was also sent him, the "upper side of which was chestnut colour, and the under side deep yellow."†

Linnæus next gave the characters very distinctly of this animal from a specimen furnished him by Dr. Garden. Other naturalists only copied him, till Bosc observed it in Carolina, and communicated a very full description of it to Latreille, which was afterwards copied by Daudin.

Merrem, from the plate to which he refers in Edwards being without the three longitudinal rows of dark spots that Linnæus gives as one of the distinctive marks of his animal, as well as from its having a collar or ring, not mentioned in Linnæus, thought it a new species, and called it after Edwards. Yet there is no doubt that the Natrix punctatus and the Natrix edwardii of Merrem are one and the same animal. Indeed I have more than once seen individuals of this species without the rings at the neck, and as frequently without the spots; and Say has seen the central row double.

* Gleanings of Natural History, vol. iii. p. 289.

† Gleanings of Natural History, vol. iii. p. 290.



Coluber aestivus

27.

Set a. pins. Ch. drawn by G. Lehman Lehman & Duval Lith.r Philad.a

COLUBER ÆSTIVUS.—*Linnæus.*

Plate XXVII.

Characters. Head long, oval, pointed in front, and covered with plates; body very long, slender, green, and covered with carinated scales above. Pl. 160, sc. 140.

Synonymes. Green snake, *Catesb.*, Carolina, &c., vol. ii. p. 57, pl. lvii.
Coluber æstivus, *Lin.*, Syst. Nat., vol. i. p. 387.
Coluber æstivus, *Gmel.*, Syst. Nat. Lin., vol. i. part iii. p. 111.
La verdâtre, *Lacép.*, Hist. des Serp., tom. ii. p. 313.
Coluber æstivus, *Latr.*, Hist. des Rept., tom. iv. p. 140.
Coluber æstivus, *Daud.*, Hist. Nat. des Rept., tom. vii. p. 101.
Coluber æstivus, *Harl.*, Med. and Phys. Res., p. 121.
Green snake, *Vulgo.*

Description. The head is elongated, oval, narrow and pointed in front, and covered with plates, of which the vertical is beautifully pentagonal, broadest in front and pointed behind. The superior orbital is oblong, and projects but slightly over the eye. The occipital plates are very large and irregularly pentagonal, most extensive in the transverse direction. The anterior frontal are quadrilateral. The rostral plate is semicircular, concave below and convex above. The nasal plate is single on each side, regularly quadrilateral, and perforated in the centre for the nostril. There are two large anterior orbital plates, and two smaller posterior orbital. The inferior margin of the orbit is completed by the third and fourth labial plates, which are six in number; the last is a parallelogram, and very large. The nostrils are large and placed laterally. The eyes are large; the pupil

black, the iris golden. The neck is slightly contracted; the body greatly elongated, and covered with carinated scales above and on the sides, the two or three inferior rows are smooth, and with plates below. The tail is very long, cylindrical, and pointed at the tip.

Colour. The colour of the whole animal above is golden green, more or less bright, according to the age of the animal or season of the year; below it is a creamy-white.

Dimensions. Length of head, 10 lines; greatest breadth of head, 4 lines; length of body, 22 inches; length of tail, 2 inches; circumference of body, 1 inch. In the individual here described, there were one hundred and sixty abdominal plates and one hundred and forty subcaudal scales.

Habits. This beautiful snake is perfectly harmless and gentle, easily domesticated, and takes readily its food from the hand. I have seen it carried in the pocket, or twisted round the arm or neck as a plaything, without ever evincing any disposition to mischief. In its wild state it lives among the branches of trees and shrubs, shooting with great velocity from bough to bough in pursuit of the insects which serve as its nourishment. Its green colour, similar to the leaves among which it lives, afford it protection against those birds which prey upon it.

Geographical Distribution. This animal abounds in Carolina, whence it extends through the southern and south-western states to Texas; how much further south or west it may be found, cannot at this time be said. The northern limit of the Coluber æstivus is also uncertain. Professor Geddings has seen it near Baltimore, and Dr. Pickering has "been credibly informed of its existence not far from Philadelphia." Beyond this latitude it probably does not reach; its place farther north being supplied by the Coluber vernalis of Dekay, an animal to which it is allied.

General Remarks. There is no doubt that this animal was first made known

to naturalists by Catesby, who called it the green snake, and described its habits very accurately. Linnæus, however, gave the first scientific description of it, from a specimen sent him by Dr. Garden, and called it Coluber æstivus, by which name it has since been generally known.

Coluber elapsoides.

28.

COLUBER ELAPSOÏDES.

Plate XXVIII.

Characters. Head small, size of the neck; body scarlet, surrounded by black rings, in the centre of which is a smaller white ring. Pl. 170, sc. 38.

Description. The head is small and like that of the Elaps fulvius, and not very distinct from the body; it is short, with the snout rounded. The vertical plate is triangular and elongated, with the basis directed forwards and the apex backwards. The superior orbital are nearly quadrilateral, pointed anteriorly, and do not project much externally. The occipital plates are oblong, their inner margins straight, their outer margins rounded, broadest in front, and joined to the vertical and superior orbital plates. There are two temporal plates, small, nearly of the same size, and quadrilateral in shape. The frontal plates are pentagonal and broad internally, but pointed externally; the anterior frontal are small, and nearly quadrilateral. The nasal plates are of similar form, with the posterior border hollowed for the nostrils. The rostral plate is triangular; its basis below, and its apex above and rounded. There are two posterior orbital plates, nearly of the same size, the superior being but slightly the larger. There is but one anterior orbital plate, nearly a parallelogram, with its greatest extent in the vertical direction. The upper jaw is covered with seven plates, nearly quadrilateral; two of which, the third and fourth, form the lower margin of the orbit of the eye. The nostrils are large, lateral, and placed at the junction of the two plates. The eyes are small but prominent, as the superior orbital plates are not projecting; the pupil is dark, the iris reddish. The neck is cylindrical, of the same size as the head. The body is a regular cylindroid, a little flattened on

the abdomen to near the tail, when it suddenly decreases in size to terminate in a small acuminate tip.

Colour. The head is black, with a small spot on each frontal plate; a white band begins at the occiput and descends to the throat, becoming broader in its descent. The ground of the colour of the body is a beautiful red, surrounded by eighteen jet black rings; in the centre of each of these is a narrow white ring. The borders of all these rings are very distinct and entire.

Dimensions. Length of head, 5 lines; length of body, 9 inches; length of tail, $1\frac{3}{4}$ inches; total length, 11 inches 2 lines. The individual here described had one hundred and seventy abdominal plates, and thirty-eight subcaudal scales.

Habits. This animal is not common; I have met with but few of them, consequently know little of its habits. It is a beautiful and harmless little snake.

Geographical Distribution. As yet I can only give South Carolina and Georgia as the habitat of the Coluber elapsoïdes.

General Remarks. It is more than probable that Bosc had this animal in view when describing his "Couleuvre écarlate,"* (Coluber coccineus,) for his description agrees perfectly well: "body vermilion, with transverse bands of yellowish-white between black bands;" and, besides this, his figure of it corresponds to the one here given, in shape, size, and disposition of the colours. But there is still some confusion, for prior to this he had sent "the animal, accompanied by a description and drawing," to Latreille, who published them both in his Histoire Naturelle des Reptiles, in which he says of it, "the snout is obtuse and somewhat of the horse-shoe shape; under part of the body uniform white." Yet in Bosc's description, quoted above, the rings are represented encircling the body, as in the Elaps fulvius, with which the animal seems to have been confounded, but from

* Med. and Phys. Res., p. 127.

which it is entirely distinct in the arrangement of its teeth; there being in the Coluber elapsoïdes, palate and maxillary teeth, and no fangs. The disposition of the colour, too, is different, as may be seen on a careful examination; for in the Elaps fulvius we have certainly a crimson groundwork and black rings, but each black ring is bordered with a smaller yellow one, both anteriorly and posteriorly. Should, however, this animal be the Couleuvre écarlate (Coluber coccineus) of Bosc, still his name cannot be retained, as it is preoccupied by the Coluber coccineus of Linnæus.

Salamandra bilineata .

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C. Rogers pinxt.

P.S. Duval Lith.

SALAMANDRA BILINEATA.—*Green.*

Plate XXIX.

Characters. Head small; body cylindrical; tail longer than the body, and slightly compressed towards the tip. Colour above yellowish-brown, with a black lateral line on each side; belly yellow.

Synonymes. Salamandra bilineata,* *Green*, Jour. Acad. Nat. Scien. Philad., vol. i. p. 325.
Salamandra flavissima, *Harl.*, Med. and Phys. Res., p. 97.

Description. The head is small, with the snout rather rounded than pointed. The nostrils are lateral, though near the snout. The eyes are prominent; the pupil black, with a golden iris. The neck is not contracted, but there is a slight cutaneous fold at the throat.

The body is cylindrical. The tail is also cylindrical, long, thick at the root, but soon becomes slender, and is slightly compressed towards the tip.

The anterior extremities are exceedingly small and delicate, and terminate in four small fingers. The posterior are twice the size, and have five toes.

Colour. The upper surface of the animal is yellowish-brown, with a black lateral line on each side, which begins behind the orbit of the eye, and is continued without interruption along the flanks, above the anterior and posterior extremities, and is generally lost near the end of the tail. The inferior surface of the whole

* From an error of the press, this stands Salamandra bislineata.

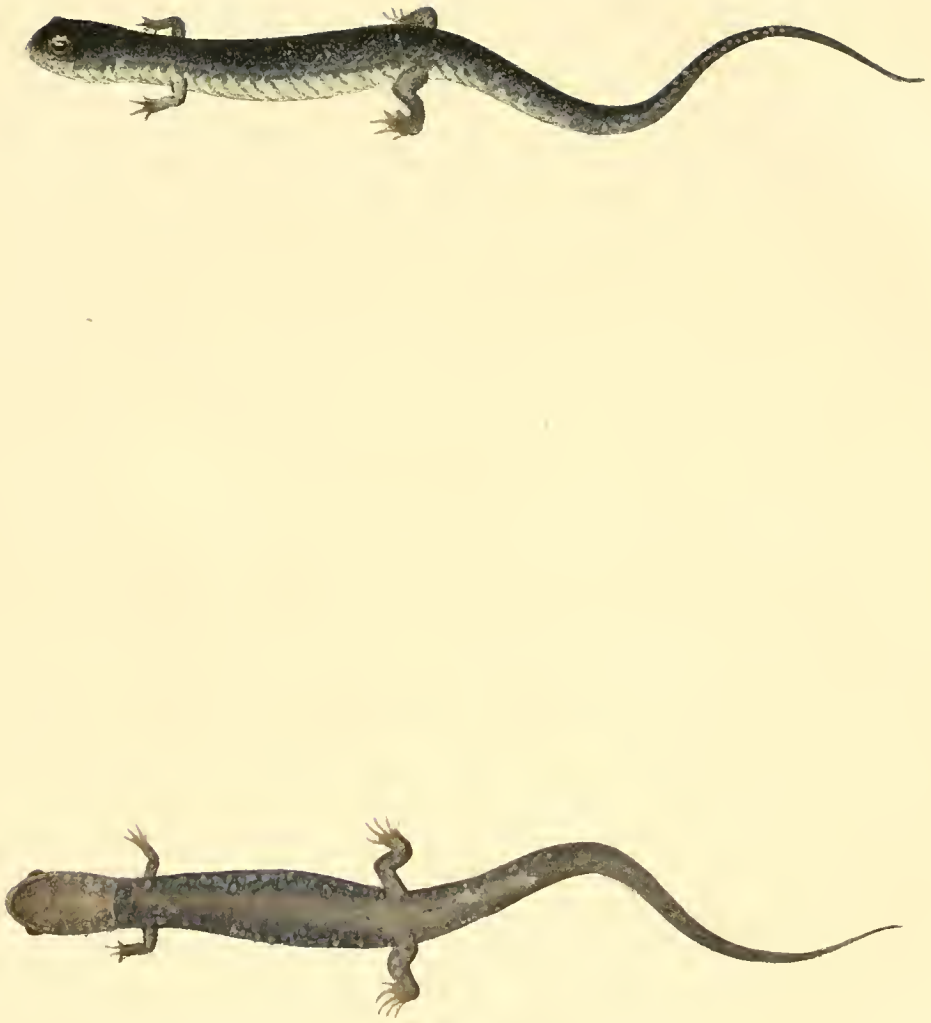
animal is bright yellow, and the skin so delicate as to allow the intestines to be seen, which gives to the animal a darker appearance along the mesial line.

Dimensions. Length of head and neck to anterior extremities, 5 lines; length of body to vent, 1 inch 3 lines; length of tail beyond vent, 2 inches 2 lines; total length, 3 inches 10 lines.

Habits. The Salamandra bilineata is found on land, but in damp, moist places, and is more lively and active than Salamanders in general. It lives concealed under rocks or old trees, whence it emerges after a rain, or in the dusk of evening, to seek its prey.

Geographical Distribution. This animal has a wide range; Dr. Pickering has observed it in Salem, Massachusetts; Professor Green in Jersey; and I have found it in the lower part of North Carolina, and have received it from Greenville, in South Carolina.

General Remarks. Professor Green first observed and described this Salamander under the name it here bears; and Dr. Harlan afterwards, apparently unaware of this, gave of it another description as the Salamandra flavissima, a name which must now be erased from our catalogue of reptiles.



Salamandra glutinosa.

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Regn. Anim.

P. S. Duval Lith. Phil.a

SALAMANDRA GLUTINOSA.—*Green.*

Plate XXX.

Characters. Head large, semi-oval; tail cylindrical, nearly twice the length of body. Colour above bluish-black, with a few minute white spots on the back and tail, and larger and frequently confluent white spots on the flanks.

Synonymes. Salamandra glutinosa, *Green*, Jour. Acad. Nat. Scien. Philad., vol. i. p. 357.
Salamandra variolata, *Gilliams*, Jour. Acad. Nat. Scien. Philad., vol. i. p. 460.
Salamandra cylindracea, *Harl.*, Med. and Phys. Res., p. 94.

Description. The head is large and approaches a semi-oval form; the snout is rather pointed than rounded. The nostrils are lateral, and near the mouth. The eyes are large and prominent; the pupil black; the iris dusky. The neck is slightly contracted, with a large cutaneous fold at the throat.

The body is elongated and cylindrical. The tail is nearly twice the length of the body, cylindrical, or almost imperceptibly compressed at its tip.

The anterior extremities sustain four fingers. The posterior are twice the size of the anterior, and terminate in five toes.

Colour. The ground colour of this animal is a beautiful bluish-black over the whole superior surface, along the back and tail, and is sparsely dotted with minute white spots, more or less abundant; on the flanks and sides of the tail these spots are much larger and frequently confluent: sometimes specimens occur

where all these spots are nearly wanting, and the animal then appears a simple bluish-black colour.

Dimensions. Length of head and neck to anterior extremities, 9 lines; length of body, 2 inches; length of tail, 3 inches 10 lines; total length, 6 inches 7 lines.

Habits. The Salamandra glutinosa lives most of its time concealed under rocks, or under the bark of fallen and decaying trees, and is frequently so numerous that many are found under the same tree. Fallen trees seem a favourite residence of this species of animal, probably because the insects it preys upon choose the same locality. It will, however, emerge from its place of concealment after rains or in the dusk of evening to search for its prey.

Geographical Distribution. This I consider as the most common of the North American Salamanders, and most widely diffused, abounding from latitude 43° to the Gulf of Mexico. Dr. Pickering has seen it in Ipswich, Massachusetts, and Dr. Storer in the neighbourhood of Boston; Professor Green in Pittsburg, Pennsylvania; Say in Florida; and I have seen them in Virginia and in the Carolinas, and have received it from Georgia, Alabama, and Louisiana.

General Remarks. To Professor Green belongs the merit of having first observed and accurately described this animal, under the name Salamandra glutinosa; and nearly at the same time, and in the same work, Gilliams gave it a new description and a new name, Salamandra variolata; long afterwards Dr. Harlan adds a third specific name, cylindracea, for the same animal. I have retained, however, that imposed by Professor Green, as it has the right of priority, and is on the whole well enough, as the animal gives off a great quantity of glutinous matter when taken in the hand.

END OF THE SECOND VOLUME.